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ACHRESTHIC ANAEMIA

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As a result of the intensive investigations in recent years into the mechanism of haemopoiesis, and particularly into the aetiology of Addisonian pernicious anaemia, the clinical and haematological definition of that anaemia has become much more precise. It is now considered to be a syndrome presenting essentially (*a*) a megalocytic anaemia; (*b*) achylia gastrica; (*c*) frequently involvement of the central nervous system or peripheral nerves; and (*d*) a characteristic response to specific treatment with the anti-(pernicious) anaemic factors present in liver or stomach, with a maintenance of the normal blood picture so long as adequate quantities of these factors are given. It has also been clearly demonstrated that pernicious anaemia develops when there is (1) a deficiency of the gastric enzyme (haemopoietin); (2) a deficiency of the substrate or extrinsic factor (food); (3) lack of interaction of these two factors; or (4) lack of absorption of the products of the interaction of (1) and (2). Certain other megalocytic anaemias closely resembling pernicious anaemia are also now well recognized,[2 3 4 9 13 15 18 21] and it is clearly realized that a megalocytic anaemia of itself does not signify Addisonian pernicious anaemia.

Nevertheless, when all these have been considered, there still remains a group of megalocytic anaemias that cannot satisfactorily be fitted into any known classification, although they so closely resemble pernicious anaemia in many respects. As a rule, these cases have been considered to be anomalous examples of pernicious anaemia, either because they failed to respond to liver or other specific therapy, or because they showed unusual features such as free hydrochloric acid in the gastric juice (cf.[14]). Certain essential differences, however, in some of these patients have raised grave doubts as to the appositeness of considering them to be cases of pernicious anaemia, for they vary not only in symptomatology and response to treatment, but also in prognosis and aetiology.

A careful survey of such instances in the literature indicates that the majority of them must be disregarded, on account either of insufficient data (often blood counts entirely lacking) or because of what now appears to have been mistaken diagnosis. Further, it must be noted that many of these cases that were resistant to liver treatment appeared during the first few years after the introduction of this therapy, and the importance of care in its preparation and the use of a full and adequate dosage was not appreciated. It has, however, been realized more and more in recent years that oral treatment may be completely vitiated by gastro-intestinal disturbances and lack of absorption, so that in such cases the therapeutic test may be only of value as a diagnostic measure when parenteral liver extracts are employed—a view that is supported by Vaughan[9] and others. These extracts were not readily available until 1931, but since that time large quantities have been given, with a marked reduction in the number of cases reported as resistant to treatment. Occasional cases are, however, still described from time to time, and the reason seems to be twofold: the preparations are inactive or insufficiently prescribed (cf. Wilkinson[11 12]); or the cases, although showing a megalocytosis, are not of the Addisonian pernicious anaemia type.

In a series of over 600 cases of pernicious anaemia collected and examined by one of us (J. F. W.) during the last few years in this clinic, a number of instances of megalocytic anaemia, closely resembling pernicious anaemia, were excluded on account of certain striking fundamental discrepancies. These patients have been, and are being, carefully studied, and there is no doubt now that seven of them closely resemble one another and represent a definite and distinct clinical entity. This type is very rare, showing about 1 per cent. of the frequency of pernicious anaemia, with which it is usually confused. As will be shown later, there is reason to believe that the anaemia may be due to an inability to *utilize*, or possibly *mobilize*, from the storage depots (such as liver, kidney, brain) in the body, the anti-anaemic principle responsible for the correct maturation of the megaloblasts, although such may be present in the body in adequate quantities. For this reason it is proposed to term this group the "achresthic anaemias" (from χρῆσθαι, to utilize). The condition is easily diagnosed, and differs essentially from pernicious anaemia and the so-called "haemolytic anaemias" (with which it is most likely to be confused) in aetiology, symptomatology, course, prognosis, and response to treatment.

Case I

A gardener's labourer, aged 34, was first admitted to the Manchester Royal Infirmary on July 15th, 1930. He complained of palpitation, dyspnoea, yellowness of the skin, weakness (which had been progressively increasing for the past seven months), and occasional numbness and tingling in both hands. There were no gastro-intestinal symptoms or soreness of the tongue. Some cough, with a moderate amount of sputum, had been present; weight steady; bowels regular; micturition normal; no haemorrhages. Previous medical history was good. No similar complaints in the family.

Examination revealed a fairly well nourished man of sallow brown complexion. Tongue was clean and moist, with some atrophy of the papillae; teeth very septic; left dacrocystitis. Liver not enlarged; spleen not palpable. The heart, lungs, central nervous system, and urine revealed no abnormalities.

Wassermann and van den Bergh reactions were negative. Fractional gastric analysis showed hypochlorhydria ; maximum free acid, 8 units. Similar results were obtained on many subsequent occasions. *X*-ray examination of the lungs showed these to be normal. The blood count was: red cells, 2,400,000 per c.mm. ; white cells, 3,800 per c.mm. ; haemoglobin, 52 per cent. ; colour index, 1.08 ; polymorphonuclears, 71.5 per cent. ; lymphocytes, 26 per cent. ; large mononuclears, 1.5 per cent. ; cosinophils, 1 per cent. ; basophils, *nil* ; nucleated red cells, *nil* ; anisocytosis and poikilocytosis marked ; platelets abundant. (He was originally considered to be an example of atypical pernicious anaemia, with free acid in the gastric juice.[14]) He was treated with desiccated hog's stomach (1 ounce daily), and moderate improvement was observed. An abridged list of the blood counts is shown in Table I.

The patient was discharged on August 19th, 1930, and remained in reasonable health for eleven months, with moderate red cell and haemoglobin values. On June 1st, 1931, the blood count had fallen considerably, although the patient said that he had taken treatment regularly. On July 6th he was readmitted to hospital. Desiccated stomach (1 ounce daily) was given for a month, with little change in the blood count, and a course (25 c.cm.) of parenteral injections of an active liver extract was equally inefficacious. On August 28th the patient had an attack of acute follicular tonsillitis. This rapidly subsided, and on September 7th a further course of ten daily injections of 5 c.cm. of intramuscular liver extract was begun. The desiccated stomach preparation was also continued simultaneously. These vigorous measures were accompanied by an almost immediate rise in the reticulocyte count, which was succeeded by an improvement in the patient's general condition, and he was transferred to our out-patient clinic at his own request. Treatment with desiccated stomach (1 ounce daily) was continued, but in spite of this his condition gradually declined.

FURTHER PROGRESS

On February 9th, 1932, he was again admitted to hospital with a recurrence of similar symptoms, associated with some diarrhoea. Examination revealed no new features ; there was a marked yellow tinge of the facial skin. The red cells were reduced to 960,000 per c.mm. Daily doses of 5 c.cm. of intramuscular liver extract and 40 grams of desiccated stomach were without effect. On February 27th a blood transfusion of 600 c.cm. was given, with disappointing results. A few days later further treatment with parenteral liver extract was recommenced. This was followed by a sharp reticulocyte crisis (maximum 35 per cent.) and the blood and clinical condition greatly improved. On April 16th he was discharged on treatment with desiccated stomach (1 ounce daily). He remained in reasonable health until the end of February, 1933, when, after an attack of influenza, he once more began to relapse.

On April 13th he was readmitted with similar signs and symptoms as on previous occasions. The Price-Jones curve showed a mean red cell diameter of 7.85 microns, coefficient of variability 17.7 per cent., megalocytosis 28.2 per cent., and microcytosis 1.4 per cent. This time he remained in the hospital for three months. During this period he was treated with several intensive courses of parenteral liver extracts of known potency. Nevertheless (see Table I) the blood condition remained almost stationary. A small reticulocyte crisis, maximum 14 per cent., occurred on one occasion during the liver treatment, but otherwise reticulocytes remained low.

On July 12th the patient went home at his own request, and was treated with desiccated stomach as before. His condition remained more or less unchanged. On September 22nd he was readmitted on account of abdominal pain, vomiting, and diarrhoea. He had lost weight, and was very icteric. The red cell count was down to 800,000 per c.mm., and the haemoglobin to 21 per cent. Another course of intramuscular liver injections was prescribed. There was a transient rise of reticulocytes to 15 per cent., and the red cells rose to 1,452,000 per c.mm. To the desiccated stomach was now added marmite (20 grams daily). His condition remained stationary. A further prolonged course of parenteral liver treatment had no effect.

On December 31st he suddenly became much worse, and relapsed into a comatose condition. A blood transfusion of 570 c.cm. was given by the direct method, with encouraging results. During the month of January, 1934, he received a further six transfusions—a total of 3,690 c.cm. of blood. This drastic treatment raised his red cell count to 3,464,000 per c.mm., with a corresponding improvement in the clinical condition. On February 19th he returned home, and treatment with desiccated stomach and marmite was continued. Table I shows that the blood count slowly fell. On March 23rd another transfusion of 500 c.cm. was administered. He remained fairly well until May 14th, when he complained of some pain in the feet, but there was no detectable oedema. On May 28th he attended in a very collapsed state. He complained of intolerable pain in the ankles ; there had been some expectoration of blood-stained mucus, and diarrhoea with flatulence had recurred. Petechial haemorrhages were discovered in the mucous membrane of the mouth. He was immediately readmitted, but died suddenly on May 30th, without response to treatment.

POST-MORTEM OBSERVATIONS

At the necropsy, carried out by Dr. H. L. Sheehan, the bone marrow (femur) was found to be bright red throughout, and much in excess of normal amount, extending along the whole length of the bone. The cortex of the femur was much thinned. There was very slight fatty degeneration of the myocardium. The aortic valve had only two cusps. The lungs were anaemic, but otherwise normal. In the stomach the mucosa was atrophic, without folds. The liver (1,720 grams) was a buff brown colour, and contained much free iron. The spleen (120 grams) was small, with pulp of normal appearance, and also contained much free iron. The other organs presented no particularly noteworthy appearances.

On microscopical examination the bone marrow was very cellular throughout, though the fat spaces were not obliterated. The predominant cells were megaloblasts (as seen in pernicious anaemia) ; other cells of red and white series were also present ; megakaryocytes were seen frequently. There was some atrophy in the centre of the lobules of the liver ; much haemosiderin present. The Malpighian bodies of the spleen were well marked ; the pulp contained many erythrocytes ; some excess of fibrous tissue and haemosiderin in large amounts were observed. The kidneys also showed haemosiderin, though in small masses. The mucosa of the stomach was normal, apart from post-mortem autolysis. The lymph glands were rather oedematous, follicles being somewhat disorganized: no haemosiderin was noticed.

HAEMOPOIETIC ACTIVITY OF THE LIVER

A suitable extract for parenteral (intramuscular) injection was prepared from the liver by the usual method employed by Wilkinson and Klein[17] for making these anti-anaemic liver fractions. When this was administered to a suitably controlled patient with typical Addisonian pernicious anaemia an excellent haemopoietic response was obtained, indicating that the liver was rich in the anti-pernicious-anaemia liver principle.

Case II

A fitter, aged 27, was admitted on October 27th, 1933, with a two months' history of increasing weakness, severe epistaxes, and sudden dimness of vision occurring occasionally but without complete blindness. Nine months previously there had been a severe haemorrhage after a tooth extraction: no other haemorrhages ; no rashes. Weight: had lost 14 lb. Appetite, poor ; bowels, constipated ; micturition, normal. In 1929 he had had pneumonia: no other serious illness.

On examination the patient appeared pale and ill. There were a few petechial spots on skin and conjunctivae ; no icterus. Pulse rate 84, regular, poor volume ; temperature, irregular pyrexia (99° F.). Teeth good ; throat and tonsils normal ; small ulcer above left upper canine. Tongue furred and moist ; no glossitis. The spleen was not palpable ; liver not enlarged. Lymphatic glands were not abnormal. Heart not enlarged, sounds fair, haemic murmur. Lungs: no unusual feature. Left retina: recent haemorrhage at upper margin of disk. Right retina: evidence of older haemorrhages around disk margins. Eye reflexes normal. Central nervous system normal. The Wassermann and van den Bergh reactions were negative. *X*-ray examination of femora revealed no abnormality. Fractional gastric analysis showed hypochlor-

TABLE I

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1930							
July 19	2.42	52	1.08	7,200	—	0	
July 27	3.73	67	0.90	7,600	—	0	S.
Oct. 6	3.45	45	0.66	4,400	—	—	S.
1931							
Jan. 5	3.36	76	1.15	4,000	—	—	S.
March 23	2.94	58	1.00	8,400	—	0	S.
June 1	1.91	51	1.30	5,300	—	0	S.
July 6	1.39	42	1.50	5,500	1.9	2	S.
July 27	1.29	41	1.58	8,800	1.7	6	S.
Aug. 28	1.89	46	1.20	18,000	9.2	1	L. S.
Sept. 9	1.95	47	1.18	9,000	13.3	0	L. S.
Sept. 21	2.62	62	1.15	7,900	9.9	0	L. S.
Dec. 7	2.74	62	1.13	5,600	—	1	S.
1932							
Jan. 28	1.43	32	1.15	16,200	—	4	S.
Feb. 13	1.00	22	1.16	5,000	1.2	2	L.S.
Feb. 29	0.87	18	1.02	3,500	0.6	3	T. L. S.
March 11	1.47	32	1.10	7,500	32.0	3	T. L. S.
March 23	2.87	54	0.95	7,200	1.1	—	S.
May 18	3.59	68	0.94	6,000	—	0	S.
Oct. 25	4.58	74	0.84	6,800	—	0	S.
1933							
Jan. 9	2.73	68	1.26	6,400	—	0	S.
March 13	2.09	50	1.19	7,100	—	—	S.
April 15	1.15	30	1.30	5,600	1.5	—	L. S.
May 1	0.84	24	1.40	—	0.9	—	L.
June 6	1.28	34	1.20	6,800	4.1	—	S.
Aug. 9	1.92	39	1.01	8,800	—	—	S.
Sept. 23	0.80	21	1.30	7,000	—	—	L.
Sept. 30	1.27	24	1.20	—	15.7	—	L.
Oct. 13	1.04	30	1.50	4,800	0.8	—	M. S.
Dec. 4	1.25	28	1.17	6,100	4.4	4	S. L. M.
Dec. 31	0.88	21	1.19	—	0.9	—	S. L. M.
1934							
Jan. 4	1.65	38	1.15	—	0.6	—	7 transfusions given
Jan. 17	2.51	50	1.00	—	1.3	—	
Jan. 30	2.91	56	0.96	4,400	0.2	1	
Feb. 19	3.09	66	1.06	5,000	—	—	S.
March 21	3.14	62	1.00	6,000	—	—	T.
April 23	2.66	56	1.04	9,200	—	0	S.
May 14	2.11	47	1.12	7,400	0.8	0	S.
May 28	1.32	39	1.50	4,800	0.1	—	

TABLE II

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1933							
Oct. 25	1.45	32	1.10	1,800	10.0	0	M.
Nov. 16	1.44	32	1.14	3,200	11.2	0	L.
Dec. 7	1.94	41	1.09	2,000	13.0	0	S.
Dec. 21	1.70	32	0.97	3,000	4.8	0	3 transfusions given
1934							
Jan. 4	3.52	64	0.90	4,600	3.8	0	
Jan. 18	4.19	82	0.98	3,000	—	0	
March 12	2.58	65	1.25	5,200	—	1	S.
May 15	2.66	59	1.10	6,200	9.1	0	S.
July 2	2.93	68	1.13	5,200	6.4	0	S.
Aug. 27	3.03	72	1.20	5,900	7.2	0	S.
Sept. 11	3.22	70	1.07	5,600	4.4	1	S.
Oct. 8	2.77	60	1.07	3,200	6.5	0	S.
Nov. 5	2.78	62	1.11	6,800	4.7	1	S.
Dec. 3	2.42	60	1.25	4,900	4.3	0	S. M.

Note.—Tables I–VII are abridged from the originals on account of space; blood counts were actually done on these patients several times, weekly or monthly, according to their condition.

* Fe = Ferri ammon. cit. L. = Parenteral liver extracts.
M. = Marmite. S. = Desiccated stomach.
T. = Blood transfusion.

TABLE III

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1933							
Nov. 27	1.37	40	1.40	2,000	2.5	—	
Dec. 22	1.71	52	1.50	4,200	1.3	—	S.
1934							
Jan. 23	1.62	40	1.25	3,100	2.2	0	L.
Jan. 30	1.81	45	1.25	3,400	12.2	2	L.
Feb. 13	1.84	44	1.19	2,800	1.4	4	T.
Feb. 19	2.32	46	1.00	2,500	0.7	0	T.
Feb. 26	2.57	66	1.30	3,200	0.3	0	
March 29	2.28	48	1.04	2,900	0.6	1	
April 5	3.02	55	0.89	4,000	0.6	0	T. S.
April 27	3.18	58	0.92	4,400	1.2	1	S.
June 1	2.70	55	1.01	3,800	4.2	16	S. L.
Aug. 24	1.46	35	1.16	2,800	12.8	14	L.
Sept. 6	2.76	56	0.98	1,800	2.0	0	T.
Sept. 12	2.68	54	0.98	2,600	0.5	0	T.
Sept. 27	2.40	43	0.90	3,400	—	0	S.
Oct. 25	1.52	42	1.40	2,800	—	8	S.
Nov. 1	2.68	53	0.99	3,600	5.2	3	T.
Nov. 15	2.48	54	1.08	3,200	4.2	1	S. M.
Nov. 29	1.62	43	1.30	6,400	4.1	6	S. M.

TABLE IV

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1934							
March 31	2.48	55	1.10	6,800	7.0	2	
April 14	2.04	48	1.20	7,600	6.2	—	S.
April 23	2.07	48	1.14	9,400	5.5	4	L.
May 7	2.03	46	1.14	8,900	2.6	2	M.
May 14	2.10	48	1.14	7,800	5.3	6	M. S.
May 17	2.64	60	1.14	10,400	4.7	—	T. S.
June 4	1.74	42	1.20	9,900	1.1	3	S.
June 9	2.59	60	1.16	11,800	3.8	2	T. S.
June 23	3.48	70	1.02	12,900	—	—	T. S.
Aug. 16	2.27	37	0.84	6,400	6.8	—	S.
Aug. 30	1.96	36	0.90	18,500	—	10	S.
Sept. 4	2.99	52	0.90	7,400	2.0	6	T. S.
Oct. 25	2.67	54	1.00	8,900	5.8	14	S.
Nov. 22	2.35	54	1.15	5,800	4.1	12	S.
Dec. 6	2.16	52	1.18	6,600	3.9	4	S. M.

TABLE V

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1933							
Nov. 21	3.08	68	1.10	—	—	—	
1934							
May 1	2.82	63	1.21	4,000	—	—	
May 31	3.10	67	1.08	3,400	2.2	0	S.
July 26	4.39	75	0.87	5,800	3.6	0	S.
Sept. 20	3.52	73	1.04	3,400	4.5	0	S.
Nov. 15	3.73	80	1.08	2,600	3.0	0	S. M.
Dec. 6	3.41	74	1.09	4,400	2.8	0	S. M.

TABLE VI

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1934							
Aug. 8	1.36	26	0.93	5,200	3.6	4	Fe
Aug. 18	1.28	26	1.00	5,000	6.8	2	Fe
Aug. 25	1.23	28	1.15	3,000	5.6	0	L.
Sept. 20	3.27	66	1.00	3,600	0.6	0	2 transfusions given
Oct. 19	2.48	58	1.16	8,800	0.3	0	
Nov. 16	1.49	38	1.27	3,700	—	1	S.
Nov. 20	2.11	47	1.12	6,000	—	—	T. M.

TABLE VII

Date	Red Cells, Millions	Hb per cent.	Colour Index	White Cells	Reticulocytes per cent.	Nucleated Red Cells per 400 White Cells	Treatment*
1934							
July 7	1.78	48	1.40	1,400	—	0	
July 14	2.08	56	1.40	3,000	2.5	—	
Aug. 4	2.06	55	1.30	2,600	1.6	0	L. S.
Nov. 17	1.92	60	1.60	2,800	3.7	0	S.

hydria (maximum free acid, 7 units; histamine, 18 units); fragility of red cells was within normal limits. The Price-Jones curve gave a mean diameter of 7.78 microns, coefficient of variability 9 per cent., megalocytosis 12.6 per cent., microcytosis *nil*. The blood count was: red cells, 1,450,000 per c.mm.; haemoglobin, 32 per cent.; colour index, 1.1; white cells, 1,800 per c.mm.—polymorphonuclears, 25 per cent.; lymphocytes, 71.5 per cent.; large mononuclears, 3.5 per cent.; no eosinophils, basophils, or nucleated red cells. Anisocytosis and poikilocytosis were marked; platelets, scanty; reticulocytes, 10 per cent.

During a short observational period his condition remained stationary, as shown in Table II. There was another right retinal haemorrhage on November 10th. Treatment with marmite (20 grams daily) and a course of intramuscular liver injections brought about no improvement. Desiccated stomach powder caused abdominal pain, and was discontinued. On December 29th a blood transfusion of 500 c.cm. was given, with excellent results. Two further transfusions of 650 c.cm. each raised the red cell count to 4,190,000 per c.mm. and the haemoglobin to 82 per cent. He was discharged, and told to report regularly.

As will be seen from Table II the blood condition slowly deteriorated. Further epistaxes occurred. Treatment with desiccated stomach was recommenced, at first in doses of 1/2 ounce per day, and then of 1 ounce. There was no untoward reaction, and some slight improvement in the blood condition. Marmite (40 grams daily) has been taken without producing any significant change. At the present time his clinical condition is fair, and his weight has increased slightly.

Case III

A night watchman, aged 62, was first seen on November 27th, 1933. There was a four months' history of dyspnoea on exertion, undue fatigue, increasing pallor, swelling of the feet and ankles, and indigestion—discomfort and substernal pain immediately after taking food, relieved by belching or alkalis. No vomiting had occurred. Appetite, good; bowels, regular; micturition, normal. No haemorrhages apart from slight epistaxis. Weight, steady. Some winter cough and infrequent "sweats" during rest. Nothing of note in previous medical or family histories.

On examination the patient was well built, and rather stout and pale. There was slight icterus of the conjunctivae. Pulse 90, collapsing character; temperature normal. Tongue: smooth, moist, and clean. Throat and tonsils appeared healthy. The teeth were artificial. The abdomen was obese, but not ascitic. Liver: smooth and tender, and enlarged to two inches below the costal margin. The spleen was not palpable. The heart was somewhat enlarged; there was a generalized precordial systolic murmur; blood pressure, 118/62 mm. Lungs were emphysematous; there were a few scattered rhonchi. Central nervous system: *nil* abnormal. Urine: acid; no albumin, sugar, or casts. The blood count (December 11th, 1933) was: red cells, 1,688,000 per c.mm.; haemoglobin, 51 per cent.; colour index, 1.53; white cells, 4,000 per c.mm.—polymorphonuclears, 24 per cent.; lymphocytes, 70 per cent.; large mononuclears, 6 per cent.; eosinophils, basophils, and nucleated red cells were absent. Anisocytosis and poikilocytosis were marked; platelets, scanty; reticulocytes, 1.1 per cent.; no polychromasia or punctate basophilia.

Treatment with desiccated stomach did not bring about any great improvement, and on January 15th, 1934, he was admitted to the Infirmary for further investigation. Fractional gastric analysis showed hyperchlorhydria (maximum free acid, 78 units). Wassermann reaction was negative. Van den Bergh test: delayed direct response. Fragility of red cells was within normal limits. The Price-Jones curve revealed a mean red cell diameter of 7.88 microns, coefficient of variability 13.5 per cent., megalocytes 24.8 per cent., and microcytosis *nil*. *X*-ray examination of the lungs gave no evidence of tuberculosis.

FURTHER TREATMENT

A course of 24 c.cm. of intramuscular liver extract was administered over eight days. As indicated in Table III there was a slight rise of red cells, accompanied by a small reticulocyte crisis (maximum 12.2 per cent.). This response was very poor. Two transfusions were therefore given of 600 and 750 c.cm. respectively at an interval of eight days. Table III shows the initial improvement, followed by a further relapse. Another transfusion of 500 c.cm. on April 4th was attended by satisfactory results. The patient was then allowed to go home, on treatment with desiccated stomach (1 ounce daily). His condition was again maintained for some weeks, but then began to decline. On June 1st a dose of concentrated intramuscular liver extract (3 c.cm.) was prescribed. Shortly after this the patient failed to attend for two months, during which time he had no treatment. When he reappeared the blood count had fallen greatly. During the next week 18 c.cm. of active liver extract were injected intramuscularly, but the blood count continued to fall, and on August 31st he was readmitted to hospital. Two transfusions of 800 c.cm. and 700 c.cm. respectively led to improvement of his condition. He was discharged on September 13th, and ordered desiccated stomach (1 ounce daily).

Again the blood count fell steadily from a red cell count of 2,680,000 on discharge to 1,520,000 per c.mm. after six weeks. Another transfusion (750 c.cm.), on October 31st, raised the blood level to its previous height. Once more, in spite of treatment with desiccated stomach and marmite, the blood count followed the same downward course. At present his condition is far from satisfactory, and it is impossible to say how long this process of transfusion and slow deterioration will be kept up.

Case IV

A gardener, aged 46, was admitted to hospital on March 29th, 1934. He stated that five months previously he had had an attack of lumbago, since when he had not properly recovered his health. For the last two months he had complained of excessive fatigue, dyspnoea and palpitation on exertion, and dizziness. Appetite good; no indigestion; bowels regular; some flatulence. Micturition, normal. Weight, steady. Some winter cough. No soreness of the tongue. Pallor had become noticeable. Swelling of the ankles had occurred. Previous medical and family histories contained nothing of note.

On examination he was a well-nourished man, pale, with slight icterus. Pulse rate 88, rather compressible. Temperature normal. Teeth, artificial. Tongue: moist, furred, no glossitis. Throat and tonsils appeared normal. Spleen was not palpable; liver not enlarged. Heart showed no unusual features: blood pressure 120/80 mm. Hg. Lungs and central nervous system presented no noteworthy features. Lymph glands were not enlarged. Urine, normal. Wassermann and Van den Bergh reactions were negative. Fractional gastric analysis revealed the presence of free acid (maximum 18 units). Fragility of red cells was within normal limits. The Price-Jones curve gave a mean red cell diameter of 7.79 microns, coefficient of variability 12.1 per cent., megalocytosis 15.2 per cent., and microcytosis *nil*. The blood count (April 6th) was: red cells, 2,020,000 per c.mm.; haemoglobin, 50 per cent.; colour index, 1.25; white cells, 7,600 per c.mm.—polymorphonuclears, 66 per cent.; lymphocytes, 26 per cent.; large mononuclears, 1 per cent.; eosinophils, 1 per cent.; basophils, absent; myelocytes, 1 per cent.; Türck cells, 5 per cent. There were two nucleated red cells per 400 white blood cells; anisocytosis and poikilocytosis were marked; punctate basophilia was present; platelets were fairly abundant; reticulocytes, 1.7 per cent.

Treatment with desiccated stomach was begun, but, as Table IV indicates, the red cell count fell. A course of 16 c.cm. of intramuscular liver extract was commenced on April 18th. The red cell count rose a little, but there was no reticulocyte response. A further similar course was also without effect. Marmite (20 grams daily) was prescribed, and later desiccated stomach (1 ounce per day), but the patient's condition remained stationary. Blood transfusions were therefore given: the first (550 c.cm.), on May 16th, was followed by a slight rigor and a transient but marked polynucleosis; subsequent transfusions (700 c.cm. on June 8th and 700 c.cm. on June 22nd) were not attended by any reaction. Desiccated stomach was ordered between the transfusions. The patient's condition was much improved, and he was allowed to go home on treatment with 1 ounce daily of desiccated stomach powder. Between this date and

the end of August the blood condition slowly deteriorated. The patient was troubled with some boils at this time, but their presence did not produce any significant change in the blood counts. On August 30th a further transfusion of 800 c.cm. was given with much benefit as before. Table IV shows that since then the same process has been repeated—a gradual fall in the blood counts, and the general condition of the patient becoming less satisfactory, in spite of treatment with desiccated stomach and marmite.

Case V

A translator, aged 62, first attended the hospital out-patient department in November, 1933. He complained of generalized itching of twelve months' duration, a "tight feeling" over the forehead, slight dyspnoea and palpitation on exertion, and a feeling of lassitude. Appetite, good; weight, steady; bowels, normal; micturition, normal; no indigestion, sore tongue, paraesthesiae, or haemorrhages. Fourteen years previously he had had "gastritis." An *x*-ray examination of the alimentary tract was negative, and he recovered on treatment with alkalis and a milk diet. The patient was treated for the itching, and given iron and ammonium citrate. He attended intermittently until May, 1934, when he was referred to our clinic. His condition was much the same, except that the dyspnoea and palpitation were more marked.

On examination he was a nervous, well-nourished man of yellowish complexion. Tongue, furred and moist; no glossitis. Teeth, artificial; throat and tonsils, apparently normal. Pulse: rate 76, regular, and full. Temperature normal. The abdomen was full, but there was no ascites: spleen not palpable; liver not enlarged. There were no enlarged lymph glands. The heart was not abnormal; blood pressure, 150/80 mm. Hg. No unusual features were observed in respiratory or central nervous systems. Urine, normal. Wassermann reaction, negative. Van den Bergh test showed a weak positive indirect reaction. Fractional gastric analysis revealed a climbing type of curve, with maximum free acid 68.5 units. The Price-Jones curve gave a mean red cell diameter of 8.05 microns, coefficient of variability 10.3 per cent., megalocytosis 24 per cent., and microcytosis *nil*. The blood count (May 1st) was: red cells, 2,820,000 per c.mm.; haemoglobin, 68 per cent.; colour index, 1.21; white cells, 4,000 per c.mm.—polymorphonuclears, 61 per cent.; lymphocytes, 31 per cent.; large mononuclears, 6 per cent.; eosinophils, 2 per cent.; basophils, absent. Nucleated red cells were absent; anisocytosis and poikilocytosis were present; platelets, scanty.

Treatment with desiccated stomach (1/2 ounce daily) was begun, and he improved for a time (see Table V). At present the blood count is fluctuating somewhat, with a downward tendency. The dose of desiccated stomach has been increased to 1 ounce per day, and marmite (20 grams) has been added, but without obvious result.

Case VI

A married woman, aged 66, was admitted to hospital on August 7th, 1934, complaining of loss of energy, fatigue, and loss of weight. This condition had been slowly getting worse for many months, but particularly during the past three months. There had been dyspnoea on exertion, palpitations, and occasional vomiting when fatigued. The appetite was poor; no true indigestion; no flatulence. The bowels were regular. The menopause had occurred normally at 55 years of age. Occasional paraesthesiae in the fingers and toes had been noticed. No haemorrhages or rashes. There was nothing of note in the previous medical or family histories.

On examination the patient was a pale, slightly icteric woman of small stature; she had clearly lost weight. There was marked pallor of the mucous membranes; there was no atrophy, fissuring, or soreness of the tongue. Teeth, artificial; throat and tonsils, no apparent abnormality; pulse, 84, regular and of fair volume; temperature normal. The abdomen was fairly "full." Liver: smooth and palpable, 1½ inches below the costal margin. Spleen: smooth and tender, also deeply palpable about an inch below the costal margin. There were no enlarged lymph glands. Heart was not enlarged. Blood pressure, 130/80 mm. Hg. No abnormalities were revealed in other systems. Wassermann reaction was negative. Van den Bergh reaction—positive indirect. Fractional gastric analysis showed hypochlorhydria (maximum 12.5 units); there was a free secretion of acid after histamine injection (maximum, 51 units). *X*-ray examination of the alimentary tract disclosed nothing of note. The blood count (August 8th) was: red cells, 1,360,000 per c.mm.; haemoglobin, 26 per cent.; colour index, 0.93; white cells, 5,200 per c.mm.—polymorphonuclears, 77.5 per cent.; lymphocytes, 16.5 per cent.; large mononuclears, 2.5 per cent.; eosinophils, 2.5 per cent., basophils, 1 per cent. There were 4 nucleated red cells per 400 white cells; marked polychromasia; anisocytosis and poikilocytosis; fairly abundant platelets; reticulocytes, 3.6 per cent.

In spite of the rather low colour index it was felt that the clinical condition of the patient and the blood picture as a whole suggested an anomalous anaemia of type similar to the preceding cases, and the results of the gastric analysis and *x*-ray examination confirmed this. Iron was prescribed in suitable doses, and then 16 c.cm. of a concentrated parenteral liver extract. On August 25th the red cells were 1,230,000 per c.mm.; haemoglobin, 28 per cent.; colour index, 1.15. A Price-Jones curve at this time revealed a mean red cell diameter of 7.87 microns, coefficient of variability 10.6 per cent., megalocytosis 18 per cent., and microcytosis *nil*. There was no response to the first doses of liver: a further course of 16 c.cm. produced no change in the blood count or the reticulocytes (see Table VI). Two transfusions of 700 c.cm. and 600 c.cm. respectively raised the red cells to 3,270,000 per c.mm., with much improvement in the clinical condition. The patient was discharged to our out-patient clinic on September 22nd, the treatment consisting essentially of iron therapy. One month later the blood count had fallen somewhat; treatment with desiccated stomach (1 ounce daily) was therefore recommended. At her next attendance the count had fallen to 1,490,000 red cells per c.mm., and, although the patient said she felt fairly well, she was readmitted a few days later for another transfusion (600 c.cm.). The treatment at present is marmite (20 grams daily), desiccated stomach (1 ounce daily), and parenteral liver extract. A further relapse has just necessitated readmission.

Case VII

A female rubber trimmer, aged 20, attended the out-patient clinic on July 7th, 1934, on account of undue fatigue and swelling of the feet after work. There were no other complaints. The appetite was good, the bowels regular, menstruation normal, and weight steady. No haemorrhages, rashes, or excessive bruising. Previous medical history comprised only an attack of laryngitis. Family history: her elder sister died from an illness characterized by great pallor and excessive haemorrhages.

On examination the patient appeared very well nourished, and had an excellent complexion and colour. The conjunctivae were somewhat pale. Tongue: moist and clean, no glossitis. Teeth, some carious; throat and tonsils, normal. Pulse rate 84, good volume. No pyrexia. There was some puffiness around the ankles—not true oedema. The abdomen showed no abnormality; spleen not palpable, liver not enlarged. There were no enlarged lymph glands. Heart: normal size and sounds. No unusual features in other systems. The blood count was: red cells, 1,780,000 per c.mm.; haemoglobin, 48 per cent.; colour index, 1.4; white cells, 1,400 per c.mm.—polymorphonuclears, 58 per cent.; lymphocytes, 38 per cent.; large mononuclears, 3.5 per cent.; eosinophils, 0.5 per cent.; basophils, *nil*. No nucleated red cells; polychromasia, absent; anisocytosis and poikilocytosis, marked; platelets, scanty; reticulocytes, 2.5 per cent. The Price-Jones curve gave a mean red cell diameter of 8.43 microns, coefficient of variability 9 per cent., megalocytosis 46.7 per cent., and microcytosis *nil*. The fractional gastric analysis proved acid secretion to be within normal limits (maximum free acid 33 units). The patient refused to become an in-patient in the hospital, and was treated by her doctor at home. Five doses of 4 c.cm. of intramuscular liver extract were prescribed, and desiccated stomach (1/2 ounce per day) was taken. There was no change in the blood count following these measures, though the patient said she felt improved. She continued to take desiccated stomach, but at her next visit the blood count (see Table VII) was much as before. This patient attends very irregularly, as, at present, she persists in continuing with her work.

(To be completed in next week's issue, where a full list of references will be given.)

PROBLEM OF THE CHRONIC DUODENAL ULCER WITHOUT STENOSIS*

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During the last twenty years the treatment of duodenal ulcer has too often been the subject of a somewhat acrimonious discussion between physicians and surgeons as to whether ulcer should be regarded as a medical or as a surgical disease. Happily this fundamental question is now settled. It is seldom disputed to-day that duodenal ulcer is primarily and essentially a medical disease, and that surgery holds but a secondary place in its treatment. There remains, however, a considerable diversity of opinion as to the exact position held by surgery: by some, operation is advised as soon as a reasonable trial of medical treatment has proved unsuccessful; by others, the benefits of surgery are said to be restricted to cases of old-standing ulcer, where cicatricial stenosis of the pylorus has supervened.

At the two extremes of the condition medicine and surgery hold undoubted sway. The early acute ulcer and the "chronic" ulcer of short standing are essentially the province of the physician, and, with energetic medical treatment, can be cured in the vast majority of cases. At the other end of the scale the late complication of cicatricial stenosis renders medical treatment unavailing. Gastro-enterostomy has shown undisputedly excellent results in this condition, and there is little need to look further for the ideal method of treatment.

Unfortunately, however, the vast majority of cases of duodenal ulcer do not permit of such simple division. It is comparatively rare for either the medical or the surgical specialist to see an ulcer patient in the early stages of the condition. Unless acute emergencies, such as severe haemorrhage or perforation, suddenly establish the diagnosis the condition is usually overlooked, or treated in the early stages as simple dyspepsia. Energetic medical treatment is very seldom employed before the diagnosis is definitely established. The modern necessity of radiological and biochemical facilities, as aids to diagnosis, means that the ulcer patient very rarely receives adequate medical treatment until he is referred to the hospital or to the specialist. Various statistics have been published regarding the duration of symptoms prior to hospitalization. A review of these would indicate that, at a moderate estimate, at least 70 per cent. of patients have symptoms for four years or more before the diagnosis is established and adequate medical treatment commenced. It will be seen, therefore, that although it is well recognized that peptic ulcer, in its early stages, can be cured by medical treatment alone in almost every case, the opportunity rarely occurs where such an ideal can be attained. If we turn to the other extreme, where the decision as to treatment again offers no difficulty, we find that cicatricial pyloric stenosis, that most definite indication for surgery, is present in only a small percentage of the large number of cases with which we are called upon to deal.

The Average Patient: Medicine or Surgery?

Thus, between these two extremes—that of the early acute ulcer, and that of the chronic ulcer with stenosis—is to be found the average ulcer patient as he is referred to the specialist. He has usually had digestive symptoms off and on for years. He has had medical treatment of a kind, from which he has not derived more than temporary benefit. The diagnosis is confirmed by *x* rays and by gastric analysis; there is no pyloric stenosis. What have we to offer him from medicine and from surgery?

In this country, at the present time, there is unquestionably a strong trend of opinion in favour of prolonged medical treatment of peptic ulcer, no matter in what stage of chronicity the ulcer may be. It has been proved most conclusively by Hurst[1] and other physicians that even the most chronic ulcers can be completely healed by medical treatment alone, and there is considerable support for the belief that if every patient with ulcer were to receive adequate medical treatment the number requiring operation would be very small indeed. While there is no lack of evidence to show that medical treatment alone *can* cure the most chronic of duodenal ulcers, it is justifiable to ask in how many cases it actually does so. The literature is rich in estimates of 60 to 80 per cent. of cures by medical means, but there are comparatively few articles from which accurate conclusions, ascertained from follow-up study in after years, can be obtained. Such statistics as are available indicate that the longer the duration of the ulcer symptoms, and the greater the number of attacks before the patient comes under medical treatment, the more refractory will the ulcer prove to such treatment (Neilson (quoted by Rendle Short[2]), and Dunlop and Murray-Lyon[3]).

The determination of cure in duodenal ulcer is of course a matter of the greatest difficulty, as, in many cases, after relief of symptoms, the ulcer persists in a quiescent state. Accordingly, relapse is not infrequent in cases which have been apparently completely cured.

Interesting findings in this respect were obtained by David Smith,[4] who analysed the medical results in 214 cases of duodenal ulcer. At the time of leaving hospital 67 per cent. of the males and 76 per cent. of the females were pronounced cured. At the end of a five- to fifteen-year period, however, the figures for patients cured had fallen to 29 per cent. for the males and 40 per cent. for the females; 31 per cent. of the male cases and 25 per cent. of the female were regarded as unsatisfactory. Very similar findings were published by Einhorn and Crohn[5] in 1926. Even in the case of private patients, treated under the best conditions, the results recorded are disappointing. Barford's[6] figures for cases treated at the New Lodge Clinic were 41 per cent. "satisfactory" and 28 per cent. "fairly good." There was a recurrence in 24 per cent. of patients, and in half of these operation was ultimately performed.

It is pointed out by Hurst and others that these so-called "failures" cannot fairly be regarded as an argument against medical treatment, but should be taken rather as a proof that medical treatment, as usually employed, is totally inadequate. But we cannot judge medical treatment entirely by its potentiality to effect a cure in the cases where it is possible adequately to employ it; we can only judge from its results, immediate and remote, in the average case.

To what extent can we hope for improvement in the future? Earlier diagnosis will no doubt lead to a larger number of ulcers being cured in their early stages, but it can hardly be doubted that the problem of the chronic ulcer will still be with us. In spite of many assertions to the contrary, the healing of a chronic ulcer can never be regarded as a rapid process. Adequate medical treatment is (in the words of Moynihan) not so much a medical problem as a problem in social economics, and, in so many cases in all walks of life, it represents an ideal impossible of attainment. With the realization that in many cases the ulcer patient, whether from economic or other reasons, cannot be promised a cure from medical treatment we have to consider what we have to offer him from surgery.

*This communication is based on part of a thesis submitted for the degree of M.D. of the University of Edinburgh.

Much has been written in condemnation of the futility of drawing any conclusions from a statistical race between medicine and surgery for priority in the treatment of duodenal ulcer, but it is only by comparing the after-results of sufficiently large groups of cases that one can determine just what one is justified in promising the ulcer patient, and also which offers the best prospect for relief or cure—medicine or surgery.

The Case for Surgery

Gastro-enterostomy must be regarded both as the original operation for duodenal ulcer and the one which the majority of surgeons still favour at the present time. Statistics regarding the results of this operation are legion, and need not be referred to in detail. All combine to show between 60 and 90 per cent. of satisfactory results (Moynihan,[7] Balfour,[8] Gaither,[9] Gatewood,[10] Horseley,[11] Walton,[12] Woolsey[13]).

Several physicians have maintained that the statistics of individual surgeons are somewhat misleading, as they present in most cases the work of acknowledged experts, and it is suggested that such figures do not represent the results obtained by the surgical community as a whole. In this respect the collective investigation carried out by the British Medical Association[14] some four years ago has a special value, because it shows the results of the operation of gastro-enterostomy as performed by no fewer than eighty-six surgeons. The results were classified as " very good " in 67.2 per cent. of cases and " good " in 22.3 per cent., thus giving a total " satisfactory " result in approximately 90 per cent. of cases.

In spite of the abundance of material from which conclusions as to the results of gastro-enterostomy can be drawn, we find little agreement between physicians and surgeons as to the benefit that is likely to be obtained from this operation. Ogilvie[15] has suggested that although the literature is full of statistics showing satisfactory results in about 80 per cent. of cases, the other 20 per cent. vary " from unsatisfactory to dreadful," and Hurst[1] has drawn a gloomy picture of the victims of surgery whose lives have been made wretched by the development of jejunal ulcer and gastro-jejuno-colic fistula.

As Ryle[16] points out, the reason for this controversy is not far to seek, when one remembers the obvious inclination of medical failures to drift to the surgeon, and of surgical failures to drift to the physician—with the result that each remains uncertain as to the results of his treatment in regard to the proportion of successes and failures. Wilkie[17] has suggested that the arguments of the ultra-conservative school against operative treatment are based on their experience with the "surgical derelicts" —the very few with regurgitant vomiting and the rather larger number with secondary jejunal ulcer, who admittedly constitute a small minority of the cases operated on. " Medical derelicts " are no less common: these are the cases which, after years of unavailing medical treatment, are referred to the surgeon only as a last resource. Many of the " surgical derelicts " present with us to-day are a sad legacy from the early days of gastro-enterostomy—the first two decades of this century, which Hurst[1] has described as the surgical era in the treatment of duodenal ulcer. The majority of cases of duodenal ulcer were then referred to the surgeon without having had anything approaching adequate medical treatment, and in some cases the anastomosis was carried out even where no ulcer was demonstrable, in the belief that it would relieve ulcer-like symptoms. Happily this state of affairs is now long past, but the result of the injudicious selection of cases in the early days of gastro-enterostomy has unjustly prejudiced the reputation of this operation at the present time. Fortunately, however, it has served to bring about a more just discrimination in the selection of cases for surgery and a higher standard of medical treatment and after-care.

Jejunal Ulcer

When we examine to-day the evidence against gastro-enterostomy we find little more than the liability to post-operative jejunal ulcer. While this is undoubtedly a much-dreaded complication, and one which has caused much suffering and distress, we have still to be convinced that it occurs with such frequency as to constitute a grave objection. The incidence of jejunal ulcer following gastro-enterostomy is variously stated by different workers, but there is little doubt that with the more careful selection of cases for surgery, and with the recognition of the essential importance of post-operative medical treatment, this complication is becoming more and more infrequent. The alarmist statistics of certain American surgeons are discounted by Luff's[14] analysis of the collective investigation carried out by the British Medical Association. In this large series of gastro-enterostomies jejunal ulcer was reported in only 2.8 per cent. of cases.

From the evidence available it would appear to be sufficiently well established that gastro-enterostomy is attended by a successful result in the great majority of cases of duodenal ulcer.

Balfour's[8] statistics of the result of this operation on medical men are particularly illuminating, as they indicate the results which can be obtained by surgical measures when the cases are judiciously selected and the operation is followed by careful post-operative treatment. These doctors undoubtedly constituted ideal subjects for surgery, in that they were aware of the limitations of the operation, and recognized the importance of post-operative medical treatment.

Physicians would seem to have every justification for their claim that if all cases of peptic ulcer were to receive adequate medical treatment there would be little need for surgery. But there still remains the insuperable problem of how this adequate treatment may be brought within reach of the average ulcer patient. Until this ideal becomes a reality surgery will continue to hold a very definite place in the treatment of duodenal ulcer. With the increasingly careful selection of cases for surgery, and with the recognition of the essential importance of post-operative medical treatment, there is every reason to believe that the successful results will increase in number, and the failures grow less.

Nature and Scope of Investigation

Numerous writers have seen reason to doubt the value of a direct comparison between the results of medical and surgical treatment of duodenal ulcer in determining the choice of procedure in the individual case. It is pointed out that statistics of the after-results of surgical treatment as a whole are apt to be misleading in that, in a definite proportion of cases, they are concerned with the chronic ulcer with cicatricial stenosis, where the results of gastro-enterostomy are undisputedly excellent. Medical treatment is, as a rule, employed primarily in cases which are quite unselected, and it has been suggested that the results in such cases cannot fairly be compared with those of surgical treatment, where the cases have, in many instances, been selected as being essentially suitable for operation. In this investigation an attempt has been made to compare the results of medical and surgical treatment in a series of cases where such a criticism cannot be applied. As pyloric stenosis must be regarded as the indication *par excellence* for operation, and therefore as the most important factor in the selection of cases for surgery, no case where this complication was present is included in the series of cases investigated. The after-

histories have, therefore, only been studied in that type of ulcer where the decision as to treatment presents the greatest problem—the chronic ulcer without stenosis.

By the kind permission of members of the honorary staff of the Royal Infirmary of Edinburgh, I have been privileged to investigate the after-histories of 480 cases of duodenal ulcer, treated between January, 1924, and June, 1931, inclusive. For the investigation of the results of medical treatment 200 cases were taken where the patient had been treated in a medical ward. In the great majority of these the diagnosis was confirmed by radiological or biochemical findings. In each of the cases the immediate response to treatment was satisfactory, and the patient was discharged without symptoms. No case where the patient was at the time referred to a surgeon is included in the series. For the study of the surgical results the after-histories were investigated in 200 patients who had had gastro-enterostomy performed for duodenal ulcer. Patients in whom definite pyloric stenosis had been observed at operation were excluded from the series. An additional series of eighty cases, where the operation of gastro-duodenostomy had been carried out, was also studied for the purposes of further comparison.

Results

Two Hundred Medical Cases.—The average duration of ulcer symptoms prior to adequate medical treatment was 5.8 years. Thirteen per cent. of patients had a history of less than one year's duration, and 34 per cent. one of less than three years. Thirty-eight per cent. had had symptoms for five to ten years, and 19 per cent. for over ten years. Fifteen per cent. of patients had been in hospital twice on account of the same condition. Of the series of 200 cases thirty-four had undergone operation for the ulcer condition since their discharge from the medical ward. The results of medical treatment in the remaining 166 cases are classified below.

Two Hundred Cases of Gastro-enterostomy.—The average duration of symptoms prior to operation was 7.5 years. Only 12 per cent. of patients had a history of less than three years' duration, and 24 per cent. had had symptoms for ten years or more. Thirty-one per cent. had received previous medical treatment in hospital. The results of medical and surgical treatment are compared in the following table.

Classification of Cases	Treatment		
	Medical		Surgical
A. Completely cured. Can eat anything. No pain. Able for full work ...	15.3 %	.....	48.3 %
B. Greatly improved. Occasional slight pain or discomfort. Able for full work	43.2 %	.....	25.2 %
C. Improved, but have frequent attacks of indigestion, and have always to be careful with diet. Able for light work	32.2 %	.....	21.6 %
D. Constantly troubled with indigestion, and can eat very little. Unable for work	9.3 %	.....	4.9 %

Effect of Chronicity on Results

In both medical and surgical series the average duration of symptoms prior to treatment bears a striking relation to the results obtained. It will be seen from the following table that the best results (Class A) of both medical and surgical treatment were obtained in those cases which had a relatively short history of ulcer symptoms. In the cases completely cured by medical means the average duration of symptoms prior to treatment was two and three-quarter years, while the figure for the surgical successes was four and a half years. In the case of the "fair" results (Class C) the average duration of symptoms was six and a half years in the medical, and eight and a half years in the surgical, series. The figures for Class B and Class D are seen to correlate to a marked extent.

Results	Average duration of symptoms prior to treatment		
	Medical		Surgical
Class A. Very good ...	2¾ years	.....	4½ years
Class B. Satisfactory ...	5½ ,,	.....	6 ,,
Class C. Fair	6½ ,,	.....	8½ ,,
Class D. Poor	11 ,,	.....	9½ ,,

Return to Work.—In the medical series the average time between discharge from hospital and resumption of work was three and three-quarter weeks. (Periods of over three months were regarded as being due to some outside cause, and were not considered.) In the surgical series the average time was two and three-quarter months. (Periods of over six months were not considered.) Since returning to work 17 per cent. of the medical cases and 12 per cent. of the surgical cases have been "off" again, on account of digestive symptoms.

Post-operative Medical Treatment.—Investigation into the duration of post-operative medical treatment has yielded some interesting information. In the cases in Class A the average duration of such treatment was five and three-quarter months. Thirty-seven per cent. returned to normal diet within three months, and 61 per cent. within six months. Eight patients continued treatment for two years. In Class B the average duration of treatment was six and a half months. Thirty-four per cent. returned to normal diet within three months, 62 per cent. within six months, and 90 per cent. within one year. In Class C 24 per cent. gave up treatment within three months, 60 per cent. within six months, and 78 per cent. within the year. Of the eight cases in Class D five gave up treatment within six months.

Two points stand out in contrast from the above investigation. First, by eight of the patients in Class A post-operative medical treatment was employed for two years before a cure was claimed. Secondly, in the case of the doubtful results (Class C) and the failures (Class D) 60 to 80 per cent. of the patients abandoned all medical treatment within six months of operation, and 80 to 90 per cent. within the year.

Gastro-duodenostomy

In eighty cases where this operation had been performed the after-results in this series were classified as follows:

Class A. Very good	28 per cent.
Class B. Satisfactory	44 ,,
Class C. Fair	22 ,,
Class D. Poor	6 ,,

Summary and Conclusions

In general, the treatment of the chronic duodenal ulcer, whether by medical or by surgical means, must be regarded as somewhat disappointing.

Confirmation is found of the view, frequently expressed, that the longer the duration of symptoms the more refractory will the condition prove to conservative treatment. A study of the operative results in this series suggests that this is a factor of almost equal importance in the case of surgical treatment. The average duration of symptoms in the case of patients "completely cured" by operation was four and a half years: in cases where symptoms had been present for seven years or more the results became proportionately less satisfactory, indicating that operation promises the best chance of cure in those cases where the chronicity of the condition is not too far advanced.

Besides the customary plea for early diagnosis and more adequate medical treatment in the initial stages of duodenal ulcer, it would seem justifiable to suggest that earlier recourse should be had to surgery in the cases unrelieved by a thorough trial of medical treatment. The benefits to be obtained from gastro-enterostomy are by no means confined to the cases where pyloric obstruction is present. In the case of the chronic ulcer without stenosis, which has

formed the subject of the investigation, the results of this operation compare very favourably with those obtained under conservative treatment alone. Forty-eight per cent. of the surgical cases were completely cured and 25 per cent. were greatly improved. The figures for the medical cases are 15 per cent. cured and 43 per cent. greatly improved.

The value of these results may be criticized, in that some of the cases are too recent for a complete cure to be claimed. The same doubt exists, however, in regard to both the medical and the surgical cases, and does not affect the pertinence of the comparison. Furthermore, while some of the more recent patients who now regard themselves as cured may possibly suffer relapse later, there are doubtless others, now classified as "improved," who will claim a complete cure at a later date.

No definite conclusions may be drawn from a comparison of the number of failures of medical and surgical treatment in this series. The "derelicts" appear to be about equally divided. The clause "unable for work," in Class D, doubless drew to this class several patients whose unfitness was due to some outside cause. In five cases information to this effect was supplied by the patient.

In the small series of cases investigated where gastro-duodenostomy had been performed, the results of this operation could not be shown to equal those of gastro-enterostomy.

In 65 per cent. of the cases investigated post-operative treatment, in the form of restricted diet and alkaline medication, was abandoned within six months of the operation. While very little guidance is available as to what may be regarded as the necessary duration of such treatment, six months cannot be looked upon as an error on the side of safety. It seems reasonable to suggest that, if treatment had been continued over a more prolonged period, the number of unsatisfactory results recorded would have been considerably less.

I am indebted to Dr. Alexander Goodall of Edinburgh for his help and advice in the carrying out of the investigation.

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J. A. Burgess (*Urol. and Cut. Rev.*, December, 1934, p. 867) records his experience of evipan anaesthesia in twenty-five minor genital operations, such as cauterization of venereal warts, dilatation of stricture, urethroscopic cauterization of follicles, meatotomy, and incision of bubo. The drug is injected intravenously at the rate of about 1 c.cm. in 15 seconds. When 2 to 3 c.cm. have been injected the patient becomes unconscious and the operation can be commenced at once. In a healthy adult 3 c.cm. produce anaesthesia for about five minutes. The patient must rest fifteen minutes after regaining consciousness, and may then go home. The ease of administration, the rapidity and pleasantness of induction, and the freedom from after-effects render evipan a useful drug to the venereologist.

ENDOSCOPIC RESECTION OF THE PROSTATE

A CRITICAL SURVEY OF 150 CASES

BY

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AND

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This report is based on an investigation of 156 consecutive cases of bladder-neck obstruction treated by endoscopic resection at All Saints' Hospital for Genito-urinary Diseases, London. In this inquiry we have determined the mortality rate of the operation and the complications that occurred, and have attempted to assess its efficiency as regards (1) *Relief of symptoms*, (2) *Anatomical results*, (3) *Permanence*, by re-examination of those patients surviving the operation for more than one year.

We have carried out a personal inquiry as regards their symptoms and general health, and have submitted them to a cystoscopic and urethroscopic examination wherever possible in order to observe the anatomical results and compare them with the symptomatic improvement. We have excluded from the late results of the series all those in which the operation has been performed less than one year before our examination.

There remain 120 cases with a post-operative period of over that duration. In this group all types of bladder-neck obstruction were treated, irrespective of the general condition, and thus the uses and limitations of the method were determined from the results in many greatly differing local and general conditions. This paper describes the dangers of the operation and the complications which occurred before the present comparatively safe technique was developed by experience gained in the early cases. We have included all patients from the first operated upon in October, 1931.

Technique

In all cases the instrument used was the McCarthy resectoscope or the Ryall-Millin modification of it. In the earlier operations the current was supplied through the "comprex oscillator radiovalve" unit, but while the cutting was excellent the coagulation was poor. During the last two and a half years the current has been supplied through a spark-gap type of generator. The result aimed at is the production of a "gutter" by the removal of the posterior commissure, middle lobe, or bar flush with the trigone of the bladder, and by undercutting the lateral lobes when present. This canalizes the supramontine prostatic urethra. It is left with a shelving floor from the trigone to the prostatic urethra. The retroprostatic pouch is eliminated. No attempt has been made to remove the greater part of the lateral lobes within the capsule, as appears to be the practice of certain American urologists. A 24 F.G.E. catheter is tied for three or four days to drain the bladder after the operation. When the catheter is removed the patient micturates normally. Daily catheterization is necessary to remove residual urine when present, and for bladder lavage in the presence of sepsis.

Although the usual time for the indwelling catheter is three days, this varies somewhat according to the type of obstruction and the progress of the case. Thus, where only a small amount of tissue has been removed, as in fibrous prostates, small median lobes, or post-prostatectomy bars, twenty-four hours is ample. In more extensive resections after removal of the catheter the patient may be unable to micturate because of bladder-neck oedema.

This necessitates reinsertion of the catheter for a further three or four days to allow the oedema to subside. Recently in the case of large vascular prostates it has been our practice to institute continuous bladder lavage through a two-way catheter, using sterile water or 3.8 per cent. citrate solution to avoid clot retention. This is unnecessary if scrupulous care is taken to arrest all bleeding points with the coagulating current at the time of operation.

Anaesthesia

The anaesthetics used in this series were:

(*a*) General inhalation (gas and oxygen) ...	30 cases
(*b*) Spinal	98 ,,
(*c*) Caudal block	28 ,,

Notwithstanding the grave general condition of many of the patients, no deaths were directly attributable to the anaesthesia. We have observed some unpleasant sequelae following the use of spinal anaesthesia, amongst which were permanent spasticity of lower limbs (one case); atypical girdle and shooting limb-pains (two cases); and a concomitant fall in blood pressure which masked potential bleeding. In consequence we are averse to its routine use. General anaesthesia (gas and oxygen) is better than spinal, but in uraemic patients with poor circulation or chronic bronchitics its use is contra-indicated. The present anaesthesia of choice is that of caudal block. It usually gives a sufficient degree of anaesthesia, and, if necessary, may be supplemented with gas and oxygen. The technique is to insert a spinal needle through the sacral hiatus. After ascertaining that the point is not in the subarachnoid space, about 30 c.cm. of 2 per cent. novocain is injected. At least fifteen minutes must elapse before commencement of the operation.

Clinical Data

In addition to renal function tests these patients all had pre-operative cystoscopic and posterior urethroscopic examination. The following figures give some indication of the ages of the patients. The blood urea figures are of some interest.

1.—*Age at Operation (156 Patients).*

80–90 years	4 cases	3%
70–80 ,, ...	60 ,, ...	38%
60–70 ,, ...	61 ,, ...	39%
50–60 ,, ...	27 ,, ...	17%
Below age of 50 years ...	4 ,, ...	3%

2.—*Blood Urea Immediately before Operation.*

Below 50 mg. per 100 c.cm. ...	65 cases ...	41%
50–70 per 100 c.cm.	64 ,, ...	41%
70–90 per 100 c.cm	16 ,, ...	10%
Above 100 mg. per 100 c.cm. ...	11 ,, ...	8%

This shows that 59 per cent. may be regarded as poor risks for suprapubic prostatectomy.

3A.—*General Complications.*

Diabetes	1
Gross myocarditis and decompensated valvular lesions	4
Marked arteriosclerosis	4

The majority of the patients had some degree of arteriosclerosis.

3B.—*Local Complications.*

Gross urosepsis	8
Calculi	7
Papilloma of bladder	1
Carcinoma of bladder	1
Cases condemned to permanent suprapubic drainage elsewhere	4

All patients treated were men complaining of quite definite symptoms referable to prostatic enlargement. Thus in 100 cases measurement of residual urine was:

Residual urine less than 2 oz.	15%
Residual urine of more than 2 oz.	31%*
Chronic retention to umbilicus	29%
Suprapubic cystostomy	6%
Unstated cases	19%

* Average 5 oz.

4.—*Pre-operative Measures.*

All patients had forced diuresis on admission by increasing the intake of fluids. Where residual urine was more than 5 oz. the bladder was drained continuously by indwelling catheter. Preliminary decompression was employed when necessary. In the earlier cases suprapubic cystostomy was performed in uraemic patients or in presence of infection. In the later series it was performed less frequently, and in the whole group was done only ten times. The type of bladder-neck obstruction was diagnosed by general examination, cystoscopy, and posterior urethroscopy. The following classification was adopted:

Generalized prostatic enlargement ...	65	cases	54%
Middle lobe type	28	,,	23%
Fibrous prostate (median bar or sclerotic bladder neck)	11	,,	9%
Early prostatic enlargement, mostly posterior commissural hypertrophy...	3	,,	2.5%
Post-prostatectomy bar due to fibrosis	4	,,	3%
Malignant prostate	9	,,	7.5%
	120		

In our opinion all patients suffering from any form of bladder-neck obstruction, in addition to a routine general examination should be subjected to cystoscopy and urethroscopy. This not only gives essential information about the obstructing factor, but also about the condition of the bladder—for example, diverticula, cystitis, calculus, growths, etc.

Results: Immediate Mortality

In 156 endoscopic resections eighteen deaths occurred, a mortality rate of 11 per cent. The table opposite gives the important facts.

A review of the causes of death thus gives the following findings for the eighteen cases.

Clot retention	6
Uraemia	3
Pyelonephritis	2
Extraperitoneal rupture of the bladder ...	2
Pneumonia	2
Pulmonary embolus	1
Coronary thrombosis	1
Cerebral haemorrhage	1

Of the above deaths 13, or 80 per cent. of the total mortality, are directly attributable to the operation; the others are common to any operation, but cannot be excluded from the general mortality rate. Of the thirteen deaths directly due to the operation, clot retention accounts for six. It is discussed in full below, but as a cause of death can be eliminated in the future.

To take some of the specific causes of special interest:

Uraemia accounts for three deaths. Two of these patients were in bad general condition, and the third, although having good renal function tests, was 84 years of age. Uraemia is liable to occur after any operation on the genito-urinary tract, and is a definite risk of the operation, but judging from the number of gravely ill patients who have survived without its development, the risk is minimal. In some respects the results of operation are most gratifying. Some of the patients operated on were "human derelicts" given a new lease of life.

Infective pyelonephritis caused two deaths. Both patients were in a poor general condition and had heavily infected bladders. Judging from these fatal cases and the

high morbidity rate in patients with gross infection of the bladder, we are of the opinion that marked cystitis is a contraindication to immediate resection. It should be treated by prolonged drainage either by catheter or by suprapubic cystostomy as a preliminary measure.

Extraperitoneal Rupture of the Bladder.—In both cases this was due to errors of technique in the hands of those with wide experience of posterior urethroscopy. It is interesting, incidentally, to see how the death rate diminishes with experience. Thus:

First 50 cases	10 deaths
Second 50 cases	5 ,,
Third 50 cases	3 ,,

Complications of the Operation

These are best considered in tabular form, as under:

Early:

(*a*) Excessive haemorrhage, with or without clot retention	21 cases
(*b*) Uraemia	5 ,,
(*c*) Infective pyelonephritis	3 ,,
(*d*) Perforation of the bladder and extravasation	3 ,,
(*e*) Gangrenous cystitis	1 case

Late:

(*a*) Epididymo-orchitis	15 cases
(*b*) Incontinence of urine	1 case
(*c*) Stricture	8 cases

EXCESSIVE HAEMORRHAGE

There were twenty-one cases. Seven of the patients developed clot retention, and six of these died. Excessive haemorrhage *per se* is not a serious condition (the blood loss is small compared with that of suprapubic enucleation), and can be controlled with hot lavage; but the clotting of the blood introduces a formidable and dangerous complication—that is, retention.

Factors in the Production of Excessive Haemorrhage.—(*a*) Type of prostate. The gross, generally enlarged prostate, especially where chronic retention has necessitated prolonged catheter drainage, is liable to bleed. (*b*) Technique. Too rapid cutting with the loop and insufficient care in securing all bleeding points with coagulating current. (*c*) Anaesthesia. Spinal anaesthetic, by lowering blood pressure during operation, increases the tendency to reactionary haemorrhage from cut vessels, which remain unrecognized during the operation.

Age	General Condition	Blood Urea in mg. per cent.	Urea Concentration Test per cent.	Type of Prostate	Special Pre-operative Treatment	Anaesthetic	Post-operative Measures and Cause of Death	Day of Death
76	Poor. Chronic retention, with overflow	50	1.6 1.9 1.6	Colossal prostate bulging into rectum	Indwelling catheter	Spinal	Clot retention. Lavage	2nd
78	Good	47	2.4 3.0 2.8	General enlargement		Spinal	Cystitis; secondary haemorrhage with clot retention 15th day. Suprapubic cystostomy 16th day	19th
72	Poor. Chronic retention, with overflow	108	1.0 1.0 1.1	Middle lobe enlargement	Indwelling catheter	Spinal	Clot retention. Refused suprapubic cystostomy	2nd
79	Poor. (Previous cystostomy)	68	0.9 1.2 1.4	Middle lobe enlargement		General	Clot retention	2nd
66	Poor			Middle lobe enlargement		General	Clot retention. Lavage	5th
59	Good	30	1.6 2.0 2.9	Post-prostatectomy bar			Clot retention. Extravesical abscess. Extravasation. Suprapubic cystostomy	8th week
84	Good. R. U. 4 oz.	54	1.7 2.2 2.3	Large general enlargement		Spinal	Uraemia	2nd
78	Poor. Chronic retention and overflow	68	0.9 1.2 1.4	General enlargement	Decompressed; then suprapubic cystostomy	Spinal	Uraemia	2nd
72	Poor. Chronic retention and overflow			Malignant prostate		Spinal	Anuria	2nd
75	Poor. R. U. 4 oz.	68	1.0 1.0 1.3	Fibrous type	Indwelling catheter 1 week	General	Pyelonephritis and uraemia. Suprapubic cystostomy	24th
76	Poor. R. U. 6 oz.	54	1.1 1.9 2.0	General enlargement		Spinal	Pyelonephritis	6th
54	Poor. Chronic retention and overflow	74.6	2.4 2.8 3.0	General enlargement	Catheterized 1 week	Spinal	Extraperitoneal rupture of bladder	1st
54	Good	27	0.8 3.0 3.6	Fibrous bar		Caudal	Perforation of bladder; indwelling catheter	6th
71	Bad. Chronic retention, with overflow			Carcinoma	Decompressed. Indwelling catheter 2 weeks	Spinal	L. pneumonia	11th
69	Poor. Retention and overflow	49	0.5 0.6 0.8	General enlargement		General	Bronchopneumonia	11th
68	Poor. R. U. 5 oz.	70	1.8 2.0 2.0	General enlargement		Spinal	Pulmonary embolus	11th
82	Poor	101	0.8 0.9 1.3	General enlargement		Caudal	Coronary thrombosis	10th
74	Good	48	1.7 2.0 2.9	General enlargement		Spinal	Cerebral haemorrhage	14th

Clot Retention.—This does not imply mere blocking of the catheter by a clot, a condition which is not uncommon and is relieved by dislodging or aspirating the clot or changing the catheter. Clot retention is brought about when the free oozing of blood from the cut surface of the prostate clots in the bladder base, and forms an impenetrable bar to the passage of fluid. It is noticed that the indwelling catheter is not draining, the bladder becomes palpable to the attendant, and a change of catheter fails to withdraw urine. If the effects of the anaesthetic have "worn off" the patient experiences severe distension pain; he becomes profoundly shocked, and if unrelieved will collapse and die in twenty-four to thirty-six hours. Trained attendants are essential in the nursing of these patients. An absence for six hours by the surgeon may result in a fatality.

Factors Precipitating Clot Formation.—These are: (*a*) Lavage with silver nitrate solution in a vain attempt to control haemorrhage. (*b*) Use of unduly small bore catheter—21 F is the smallest to be used with safety. (*c*) Infection. In four cases clot retention followed secondary haemorrhage, which usually occurs in four to ten days in previously heavily infected bladders, especially when emptying incompletely after removal of the indwelling catheter. Incomplete emptying may be due to: (1) inadequate removal of tissue, (2) atony of the bladder, and (3) oedema at the bladder neck.

Prophylactic Treatment.—Excessive haemorrhage may be avoided by choice of case—that is, avoid operating on very large prostates or on grossly infected bladders; choice of anaesthetic; care in technique as regards coagulation of bleeding points and in the after-care of the patient. The bladder must empty completely after removal of the indwelling catheter. A watch should be kept for the warning of blood-stained voided urine. When this occurs hot wash-outs with sterile water at 120° F. usually suffice, or, if the former fails, reintroduction of the resectoscope and diathermy of bleeding points. As regards clot retention, its prophylaxis is haemostasis. In rare cases in which oozing is troublesome after all precautions have been taken, continuous two-way irrigation with 3.8 per cent. sodium citrate solution is instituted (Loughnane). If clot retention has been allowed to occur, and an attempt to remove clots with an evacuator and lavage has failed, it is advisable to perform suprapubic cystostomy as soon as possible. This permits the clots to be removed and the bladder to contract down and stop bleeding. Recurrent instrumentation, with superadded shock and danger of infection, is avoided. In addition, general measures, such as continuous intravenous saline or blood transfusion, when indicated, should not be delayed.

URAEMIA

This is especially liable to occur as an acute process in patients with renal damage. It makes its appearance as a decreased urinary output with progressive drowsiness. Preventive treatment consists in pre-operative forced diuresis, and an indwelling catheter for bladder drainage when necessary (residual urine over 3 oz.). Treatment of the established condition consists of continuous drip intravenous saline and glucose plus usual medical treatment (Wheeler).

PERFORATION OF THE BLADDER

Due to errors of technique; two patients died and one recovered. As soon as this condition is recognized immediate suprapubic cystostomy is the only course to adopt.

GANGRENOUS CYSTITIS AND EPIDIDYMO-ORCHITIS

Gangrenous cystitis occurred in one case, and resulted in extravasation of urine. Suprapubic cystostomy was performed, and the patient is now in excellent health. Epididymo-orchitis accounted for fifteen cases (12 per cent.). Most of these were mild, and subsided spontaneously. In two cases abscess formation occurred, and required incision. It is interesting to observe that in the majority of cases this condition occurred on the left side.

STRICTURE

In 120 patients this occurred in eight cases (7 per cent.). Three were at the triangular ligament and five were meatal. The factors in the production of stricture are instrumental and infective. The resectoscope sheath is of large size, 28 Charrière, and if introduced without gradual preliminary dilatation the resultant trauma will cause stricture formation. A narrow meatus should be subjected to meatotomy, and not split with the instrument. Again, excessive coagulation in the posterior urethra may be followed by stricture formation. Infection around the indwelling catheter is the probable cause in most cases occurring at the bulb, especially if an exacerbation of an old urethritis. The treatment of these strictures differs in no wise from that of an ordinary traumatic and inflammatory stricture, and their possible occurrence merely emphasizes the need of routine re-examination so as to treat the condition at an early stage.

Late Results

In compiling these results we have made a critical analysis of the first 123 operations, and in order to arrive at some conclusion as to the benefit derived have re-examined the patients personally as has already been described in the introduction. All these patients had undergone their operation more than one year ago; about half of them two years ago; and a small proportion three years ago.

We have divided the results into three groups, thus: Group 1 (good results), Group 2 (improved results), and Group 3 (poor results).

Group 1.—For a patient to be classed as a good result we demand the following. (*a*) There must be improvement in the general health. (*b*) There must be no difficulty in micturition, and the urinary stream must be good. (*c*) No pain, burning, or scalding must occur during the act. (*d*) Frequency must be restored to normal, with complete freedom from night voiding on more than one occasion. (*e*) The urine must be clear. (*f*) The residual urine must be no greater than 1 oz. (*g*) Cystoscopically there must be no cystitis, and urethroscopically a good shelving floor.

Group 2.—Into this class we have placed all those patients who have been greatly improved by the operation, but in whom all the above requirements have not been fulfilled.

Group 3.—In this group are those patients whose symptoms have not been alleviated.

The total number of cases in the series under review was 123, distributed as follows:

Group 1 (good results)	62
Group 2 (improved results)	19
Group 3 (poor results)	9
Died after operation	15
Died since	6
Untraced	12
Total	123

GROUP 3

Taking Group 3 first, the following table gives the necessary data.

Age	Type of Prostate	Complications	Remarks
79	General enlargement with cystitis	Marked cystitis	Patient had been self-catheterized for ten years. Improvement for two years, then became more heavily infected
61	General enlargement	Severe cystitis needing suprapubic cystostomy	Contracted bladder
62	General enlargement	Haemorrhage with infection	Still chronic cystitis
56	Very big prostate	Incontinence	Permanent incontinence
55	Very big prostate	—	Temporary improvement; had suprapubic prostatectomy later
65	Big malignant prostate	—	—
74	Big malignant prostate	—	—
76	General enlargement	Cystitis	Carcinoma developed later
52	Big malignant prostate	—	Had previous suprapubic, healed

These nine patients when examined were as bad or worse, or had required further operative intervention. The following facts are seen from the above table: (1) all cases had big prostates; (2) three were bad because of infection; (3) four cases were malignant; (4) one case had permanent incontinence; (5) one case required later prostatectomy, which proved successful.

GROUP 2

Among this group of otherwise good results twelve cases had a frequency of micturition of 2–4 at night (although this was less than before operation): cystoscopy revealed chronic cystitis. There were four cases of malignant prostate (two of whom had "permanent suprapubic drainage"): these were improved, and passing urine *per vias naturales*. Good results were obtained in three cases, but they had strictures, which are now being treated. Some difficulty in passing water, with a small stream, was experienced in two cases.

GROUP 1

These require no further description, as they fulfilled all the stipulated requirements. The sixty-two good results were made up of the following pre-operative types: middle lobe enlargement, nineteen cases; general enlargement, thirty cases; fibrous bladder neck, nine cases; early cases of general enlargement, three cases; and post-prostatectomy bar, one case. In all, the cases surviving the operation for more than one year and re-examined amounted to ninety. The table below summarizes the facts.

Type	No. of Cases	Good	Improved	Poor
General enlargement ...	50	30	14	6
Middle lobe	19	19	—	—
Fibrous	9	9	—	—
Early enlargement ...	3	3	—	—
Post-prostatectomy bar...	2	1	1	—
Malignant prostate ..	8	—	4	4

Conclusions

As the result of these investigations we are convinced that the cases giving the best results with the least liability to complications are the middle lobe enlargements and the fibrous bladder-neck contractions. Early general prostatic enlargement can be treated with safety by this method, and in future will be submitted to this operation in greatly increasing numbers. Established generalized prostatic enlargement may be treated with success, but the possibility of complications is more likely than in the above. In patients with very large prostates the operation of choice is suprapubic prostatectomy, but if for any reason this is contraindicated, then endoscopic resection should be performed, if necessary in two or more stages, and this will relieve their symptoms and conserve normal micturition. We believe that permanent suprapubic cystostomy for non-malignant uncomplicated prostatic disorders is obsolete, and that even in malignant prostatic obstruction many cases can be considerably alleviated by this procedure.

In our examination of these patients the following interesting facts emerged: (1) In some of the cases the full benefits of the operation are not experienced until long after discharge from hospital, sometimes three months or more; cases leaving hospital, apparently poor cases, have, with the clearing up of cystitis, oedema of bladder neck, etc., become "Group 1" results. (2) In many of the cases examined, in spite of enormous lateral lobes, which by their apposition apparently convert the prostatic urethra into a vertical slit, the patients have been able to empty the bladder completely, though slowly, with a small urinary stream. This indicates that the removal of tissue in the region of the posterior commissure and the production of a shelving floor removes the factor of the prostatic enlargement responsible for retention obstruction. Undoubtedly the best results have been those cases with a good "gutter" made by undercutting the lateral lobes; these have no difficulty, a good-sized urinary stream, and plenty of force.

Summary

In this review we have satisfied ourselves that:

1. In a high proportion of cases of bladder-neck obstruction the symptoms can be completely relieved and the patient restored to normal by endoscopic resection.

2. Considerable experience by the operator in this field of surgery is required before he can undertake the procedure with any degree of safety.

3. The following points are of importance: (*a*) Choice of case. (*b*) Relation of anaesthesia to haemorrhage. (*c*) Danger of infected bladders. (*d*) Anatomically all that is required is the formation of a good "gutter." (*e*) Permanence. It is early to speak of permanence of results yet, but in those of more than two years' standing that we have examined there seemed no reason for supposing that they will require further operation.

We wish to acknowledge our gratitude to the honorary surgical staff of All Saints' Hospital for their encouragement in this research and for permission to utilize notes of their cases.

Further details have now been received of the programme for the celebration in May of the 150th anniversary of the Vienna General Hospitals, to which reference was made in these columns on December 22nd, 1934 (p. 1185). Substantial reductions in railway fares will be available in Austria, with extensions of time and also availability of tickets for excursions elsewhere in that country. A post-graduate class will be held from May 13th to 25th in internal medicine and related topics, with special reference to modern therapy. At the conclusion of the fortnight there will be a clinical course of the same duration in paediatrics, conducted by Professor Hamburger. Another course in gynaecology will continue from May 27th until June 3rd under Professor Weibel, while a third course in dermatology and venereal diseases will be held under Professor Kerl from May 27th to June 6th. Details can be obtained on application to the offices of the Vienna Medical Faculty, Alserstrasse 4, Vienna IX.

IMMOBILIZATION IN THE TREATMENT OF SUPPURATION

BY

MONTAGUE DIXON, M.D., B.Sc.

Broadly speaking, the treatment of acute and of chronic inflammation have been different for generations, heat being used in the former case and immobilization in the latter. There is nothing or little to say against heat, but a great deal to say *for* immobilization.

Rationale

Except in cases like acute septic infection of the hand immobilization has not been used for the treatment of acute inflammation unless the motive has been primarily to relieve pain, as in the case of acute septic arthritis, when fixation and extension are applied. In these two groups of cases in which the inflammation is affecting parts of the body where the prime function is movement, recovery without immobilization is very incomplete and function is permanently impaired or even destroyed.

Immobilization should, however, be utilized in all cases of acute inflammation, whether concerned with movement as a function or otherwise. It is essential to procure stillness of (*a*) the inflamed tissues, and (*b*) the surrounding tissues in order to (1) localize the inflammation, and (2) relieve pain.

What service does pain render to the organism? Primarily to draw attention to the trouble, be it injury or disease; finally to demand, peremptorily and pitilessly, immobilization. How do we endeavour to ease pain? (1) By immobilization; (2) by heat; (3) by cold; (4) by analgesic drugs. All these influences act through the nerves; immobilization producing a beneficial trophic effect by the easing of pain; heat and cold by the agency of counter-irritation, which is a reflex trophic activation, stimulated by the message sent from the cutaneous nerves which are receiving the heat or cold in the form of poultices or compresses, or are being influenced by rubbing or stroking. How striking is the effect of a sinapism or a leech on the pain of pleurisy, or the relief to the burning tightness of acute tracheitis of a sinapism over the sternum.

Heat is said to relieve pain by reducing tension. But does it? Can it? Are there not present in the inflamed tissues already both heat and dilatation of blood vessels? Cold certainly does not relieve tension, yet its effect upon pain is immediate. Analgesic drugs do their work by their direct effect upon the nerves, and possibly may have a deleterious effect by interfering with normal trophism.

Over and above the benefit it procures by the relief of pain, immobilization prevents the spread of toxic products and inflammation, acting upon the cellular structures and the lymphatics. Every day in his consulting room the general practitioner sees cases of inflammation going on to suppuration demanding his intelligent care, which does not begin and end with instructions to "go home and poultice it." This branch of our daily work is lifted out of the boredom of much of such work if we practise the method which I will endeavour to describe—this treatment by immobilization rather than by heat. To enumerate a few of such troubles, we meet, daily, boils, carbuncles, suppurating sebaceous cysts, inflamed infected glands in armpit, groin, and neck, lymphangitis, poisoned finger, whitlow, and so on.

Method of Treatment

I always try to immobilize the skin overlying and/or surrounding the inflamed area, and also the tissues (muscular) underlying it. The former is fixed by zinc oxide rubber plaster, the latter by splinting (best by a plaster-of-Paris light cast or splint). Before applying the rubber plaster the skin must be shaved and painted with tincture of iodine. The rubber plaster should be made to adopt perfect and even contact, by cutting radial incisions in its border with scissors which cut away, by a horizontal movement parallel to the plane of the skin, all folds in it. This plaster is removed daily or on alternate days, according to the amount of discharge, and the part cleansed with ether (which readily removes any sticky zinc oxide rubber which has not come away with the fabric), wiped with methylated spirit, painted on alternate days with tincture of iodine, and then fresh plaster applied.

I will venture to give further details in describing the treatment of a carbuncle of the forearm, and of suppurating glands in the neck from impetigo of the scalp.

Carbuncle of the Forearm.—The immobilization of the skin is carried out as described above. The underlying layer of muscles is put at rest by the application of a light plaster-of-Paris slab to the side of the limb away from the carbuncle. If desired, a small round hole may be left in the centre of the strapping, through which the centre of the carbuncle points, and a paste dressing, such as antiphlogistine, can be applied warm, and changed night and morning. If this be done the strapping can be left undisturbed for days. The plaster-of-Paris splint should extend to the finger-tips, and the arm should be carried in a sling.

Suppurating Glands in the Posterior Triangle of the Neck.—The child who has been suffering from impetigo should have a diet free from sugar and starch. In a very bad case rest in bed with the maximum amount of fixation of the neck is desirable. The skin and scalp should be shaved to allow the application of a large circle of zinc oxide strapping over the area of the enlarged glands. Every day the area of inflammatory oedema will diminish in size, until there is felt a small central swelling, the resistance, swelling, and tenderness of the peripheral portion of the area having subsided. On removing the plaster, if a small, fluctuating area is felt, this should be aspirated and the plaster reapplied. Aspiration may have to be repeated, and more than once, but it is very rarely that one has to incise such abscesses thus treated. Tuberculous glands treated in this way run a very favourable course also, but a slower one, naturally, than the acutely infected glands. The needle for aspirating needs to be one of fair calibre, but the tiny area of skin through which it passes should be anaesthetized with eudrenine inserted with a No. 20 needle. The same syringe will serve for anaesthetizing and for aspiration. It should be of 5 c.cm. volume. After several aspirations the contents of the cavity will be found to be more blood than pus, and then success is well within sight. Absolute asepsis is essential, and this is so simply attained by the avoidance of water and lotions and the use of ether and spirit and iodine.

Of course one cannot overemphasize the importance and urgency of completely immobilizing the hand in its entirety and always immediately in suppuration which, by its spread, might involve the tendon sheaths. This immediate immobilization is startling in its efficacy in localizing the trouble. And the application of the zinc oxide strapping helps here too.

The well-known German periodical *Die dermatologische Wochenschrift*, published by J. A. Barth of Leipzig, has just entered upon its hundredth volume. For more than fifty years it has been prominent as a weekly exposition of dermatology, containing accounts of original research work, discussion of debatable principles and hypotheses, and current news and opinions. Its editorial board includes many prominent dermatologists

RECOVERY AFTER COMPLETE STOPPAGE OF THE HEART FOR FIVE MINUTES

BY

G. PERCIVAL MILLS, F.R.C.S.

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Many cases have been recorded in which the heart has started beating again after cardiac massage, but the great majority of these have died within forty-eight hours from cerebral symptoms. The case reported below shows, I think, that cardiac massage must be undertaken within a very few minutes of the heart stopping (and the sooner the better) if there is to be any hope of permanent recovery.

Case Record

A male aged 58 years was admitted to the General Hospital, Birmingham, under my care suffering from duodenal ulcer with considerable gastric stasis. After the usual investigation it was decided to do a partial duodenectomy or a posterior gastro-jejunostomy according to the condition found at operation. The anaesthetic was percaine, 16 c.cm., injected between the second and third lumbar vertebrae, preceded by morphine, 1/4 grain, and hyoscine, 1/100 grain. Immediately after the spinal injection 3/4 grain of ephedrine was injected into the muscles of the back. The usual Jones technique was followed.

At the commencement of the operation anaesthesia was perfect, and the patient was breathing quietly, mainly with the diaphragm. His blood pressure had fallen considerably, however, so a second injection of ephedrine, 3/4 grain, was given, and his condition then caused no anxiety, but it was noticed that bleeding from the incision was less than is usual.

Gastro-jejunostomy was selected as the most suitable operation, and everything proceeded normally until the second or inner anastomotic suture was two-thirds completed. The anaesthetist had been a little anxious owing to the shallow breathing and weak pulse, and had given a third dose of ephedrine, but at this point the breathing ceased entirely and the pulse at the wrist could not be felt. The patient made some gaping movements with the mouth and lips such as one frequently sees *in articulo mortis*, and all of those present believed he was dead. There was no corneal reflex, and no pulse could be detected anywhere. I slipped a hand up under the diaphragm and found that the heart had stopped; with my left hand on the front of the chest and my right hand under the diaphragm I could feel what appeared to be an empty flabby heart without a flicker of pulsation. Since no inhalation anaesthetic and no basal anaesthetic had been given, it appeared that the heart must have failed from an excessive fall in blood pressure. The head had, of course, already been lowered and artificial respiration started; strychnine with adrenaline (m v) had been given and 2 c.cm. coramine. These measures had no apparent effect, so I continued cardiac massage through the diaphragm while an assistant injected adrenaline (m x) directly into the ventricle. I hoped for an immediate response, but it was about a minute later that I felt, for the first time, a faint flicker in the flabby organ I was compressing, so faint that I was hardly sure of it and mentioned it only with diffidence; the look of incredulity had hardly faded from the faces of my assistants when the heart suddenly started beating vigorously at about 120 to the minute.

Artificial respiration was continued while I hurriedly completed the operation. During this period the patient occasionally made the same gaping movements of the lips, "like a fish," which have been mentioned before, but no respiratory movements of any kind were made. It was fully half an hour later that the first faint movement of respiration occurred, and this was only kept going by artificial help and the frequent administration of carbon dioxide.

Two hours later the patient looked like a case of severe concussion, completely unconscious and motionless but with a fair rapid pulse and shallow, almost imperceptible, respirations. Fortunately he retained rectal salines well, and in spite of a temporary collapse ten hours later he was still alive on the following morning. At this period he made slight voluntary movements for the first time, and murmured unintelligibly when spoken to. During this day he had a series of tonic spasms resembling those of tetanus; the limbs and body became rigid and there was even definite opisthotonos.

Forty-eight hours from the operation he spoke intelligibly for the first time and then gradually developed the typical condition of cerebral irritation that one sees after a severe head injury. By the third day an attendant had to be constantly present to keep him from getting out of bed, and it was a week before he could be safely left alone for a moment. Three weeks after the operation he had completely recovered.

Discussion

Time factors are always difficult to estimate in these emergencies. So far as could be ascertained, the pulse and respiration ceased at the same moment, and this would be about fifteen minutes after the commencement of the operation and half an hour after the injection of the percaine. The duration of the heart stoppage is more difficult to determine—I know it was long enough for my fingers to become extremely tired with the cardiac massage, though I removed my hand for a moment while the adrenaline was injected, and my own impression was that the period was eight or ten minutes. One remembers emotions rather than actual intervals on such occasions, and I certainly remember that I had given up all hope at one period and had continued only from a sense of duty rather than with any real hope of success. Other observers put the time at about three to four minutes, and it is of course possible that my natural anxiety may have led me to overestimate the time, though I am personally convinced that it was not less than five. Accepting this figure, the time-table would be approximately as follows:

Zero time.—Injection of percaine.
Fifteen minutes. Operation started.
Thirty minutes.—Respiration ceased. No pulse at wrist. Artificial respiration started.
Thirty-one minutes.—No pulse anywhere: heart stopped as felt through diaphragm. Cardiac massage started.
Thirty-four minutes.—Adrenaline injected into heart.
Thirty-five minutes.—Heart started beating.
Forty minutes.—Gaping movements of mouth and lips.
Forty-five minutes.—Operation concluded.
Sixty minutes.—A faint respiratory movement.
Two hours.—Still complete unconsciousness. Resembled a case of severe concussion.
Twenty-two hours.—First voluntary movements.
Twenty-four to twenty-eight hours.—Series of generalized tonic spasms.
Third day.—Signs of "cerebral irritation."
Fourth to sixth day.—Very noisy and getting out of bed.
Seventh to tenth day.—Gradual restoration to normal mentality.

I do not think that this was a case of respiratory failure from involvement of the phrenic nucleus, for the diaphragm was acting well up to the time when pulse and respiration failed together. Failure was due to an exceptional fall in blood pressure, not counteracted by three doses of ephedrine. The prolonged unconsciousness was presumably due to the effect on the brain of a temporary anaemia, though I like to think that my rhythmic cardiac compression may possibly have kept enough circulation going to save it from irreparable damage. The tonic spasms suggest cortical stimulation from the returning circulation (or recovery of pyramidal cells), and the subsequent period of irritability fits naturally into the picture.

Clinical Memoranda

A Case of Abnormally High Blood Urea

One can only conclude that the damage to the kidneys in the case reported below was caused in the first place by the attack of diphtheria which the patient had as a child, and that it progressed insidiously during the next thirty years, causing a gradually rising blood urea, to which her body accustomed itself. The interest of the case lies in the patient's ability now to carry on a more or less normal, if restricted, life, with a blood urea of such a height as would usually be found only in those at death's door. It would be interesting to know if there are any other recorded cases of a person going to a cinema with a blood urea of 350.

An unmarried woman of 44, who had always been of a very active and cheerful disposition, had an attack of bronchitis in December, 1933. During the previous year, however, she had not felt quite herself, was easily tired, and had not her usual appetite. She did not go to bed when she had bronchitis, but recovered her previous health. In February, 1934, she had influenza, which, she says, was the beginning of all her present trouble. From the time of the influenza she began to suffer increasingly from indigestion, occasional sickness, vertigo, and headaches, but, above all, from great lassitude, and her friends noticed that she was behaving queerly and becoming very slow in her speech. The family mental history was not good, but the patient's own medical history contained nothing of note, except that she had had diphtheria as a child. The periods, which had been quite regular up to February, ceased, and have not since returned.

She consulted her doctor for the first time in March; he found her blood pressure 220/120, and ascribed her symptoms to cerebral arteriosclerosis. After a period in bed, during which her blood pressure went down to 185/90, she came to the seaside to some relatives for a change. When I saw her in the early part of April she was very drowsy, but having restless nights, and, if left to herself, she would be quite content to doze all day to the exclusion of everything, including food. She complained greatly of weakness and cramp in her legs and feet, and there was a great aversion to food, nausea coming on soon after she had eaten anything. Her speech was slow and rather slurred, and her tongue was white and coated. Blood pressure was 160, the arteries being fairly soft. There was marked tremulousness of the facial muscles and some albumin in the urine, but otherwise nothing of note.

A provisional diagnosis of menopausal neurosis was made, with the possibility of encephalitis not being overlooked. She was given corpus luteum by injection on alternate days, and a preparation of mixed glands by the mouth, as well as a carminative mixture. During the next two weeks her condition remained much the same, but she complained considerably of hiccups, and she stayed in bed largely because of her extreme weakness. The amount of urine passed began to decrease, and on April 26th, there being more albumin present, I decided to take a specimen of blood for an estimation of the blood urea content. Next day there was practically anuria, and I was astounded to find the blood urea 490 mg. per cent. On the morning of the 28th I asked Dr. P. Lazarus Barlow, pathologist to the East Sussex Hospital, to confirm my findings, but as a result of active measures during that night she passed about 10 oz. of urine, and he obtained a figure of 394 mg. per cent.

Making her drink upwards of four pints of fluid a day, with large doses of potassium citrate and also theominal, I found that the amount of urine increased to 80 oz. a day, and the blood urea came down to 340 on May 5th and 210 on May 26th. With this her general condition began to improve, the tongue cleared, the drowsiness, nausea, and indigestion decreased, and she began to get up. On June 17th the blood urea was 240, but the patient was continuing to improve, and in July all drugs were stopped. On August 18th the blood urea was up to 300, but she was improving, and was getting out and walking half a mile a day. There was still marked lethargy, however, and it required considerable firmness to get her to leave her bed in the morning or her chair later in the day. Now, the beginning of October, her condition is much the same. The blood urea is 350, but on the whole she is fairly well, although she still complains of a certain amount of nausea, and is by no means her old, energetic self. Throughout her convalescence she has begun to "wake-up" in the latter part of the day, and recently has amazed her relatives by going to a cinema two evenings in succession.

Bexhill-on-Sea. D. E. DUNNILL, M.B., B.S.LOND.

An Unusual Case of Mediastinal Abscess

The following case is to me difficult of satisfactory explanation.

A man, aged 76, was admitted to the National Temperance Hospital complaining of inability to swallow solids for five weeks, and difficulty in swallowing liquids for two weeks. Barium skiagrams showed an oesophageal stricture of indefinite length at the level of the tracheal bifurcation. The patient was admitted for oesophagoscopy; a spiral tube of German silver, with four needles each of 2 mg. radium screened with 0.5 mm. platinum attached longitudinally to its outer surface, was prepared ready for insertion. Through such a tube a patient can take nourishment while the radium is doing its work. This method has been found by several, including repeatedly myself, to give very satisfactory results, the patient thereafter living a practically normal life for as long as six months, or even more.

At the level indicated by skiagraphy the endoscopic tube disclosed a red, moriform mass partially obstructing the left side of the lumen of the gullet. Three small pieces were easily and gently removed for pathological investigation. The lumen was dilated with bougies, and the tube carrying radium was inserted and attached to the cheek by silk threads. The whole procedure occupied ten minutes. In the ward he was subsequently able to drink only small quantities of glucose and diluted milk, and retained nothing per rectum. He rapidly succumbed, dying in thirty-six hours, his condition being too grave to warrant gastrostomy, even under local anaesthesia.

POST-MORTEM AND PATHOLOGICAL EXAMINATION
(Dr. Sanguinetti)

The pieces removed were simple granulation tissue, with no trace of malignancy. This tissue, which had simulated a neoplasm, demarcated one end of a completely shut off abscess, 2½ by 3/4 in., shaped like a small curved sausage. The abscess walls were very thick, suggesting a duration of several weeks; no opening could be found between the abscess cavity and the oesophageal lumen. The sausage-shaped abscess passed from its contact with the oesophageal wall to lie on the upper aspect of the aorta at the region where the arch becomes the descending aorta. Here the abscess wall was adherent to the aorta by a black, gangrenous patch. Serial sections of the abscess wall excluded any possibility of malignancy; it consisted only of fibrous tissue, necrotic in places. The abscess contained no foreign body and no trace of lymph gland structure; microscopically the contents were simply pus. Trachea, bronchi, lungs, and all other organs were normal. The abdominal wall was not wasted, and the omental fat was not below normal for his build.

COMMENTARY

The following explanations suggest themselves:

1. Infection from the fascial planes of the neck.—I have seen such an infection eventuate in a similar encapsulated, as distinct from a diffuse, abscess. But in the present instance there was no focus or history of any focus.

2. Perforation of the gullet wall by a foreign body, such as a fish-bone.—Not only was no foreign body found by careful search, but no fistulous communication could be traced between oesophagus and abscess; the latter was completely closed off.

3. The breaking down of mediastinal glands, malignant or tuberculous.—No focus, however, could be found for either, and the precise microscopical evidence was entirely negative.

London, W.1. H. LAWSON WHALE, M.D.Cantab., F.R.C.S.

Reviews

MODERN METHODS IN HOSPITAL TREATMENT

The twenty-second volume[1] of the *Westminster Hospital Reports*, recently published, covers a period of four years. The preceding volume was exclusively devoted to problems of radium practice. In the present one is included a series of articles on various aspects of general and special practice in hospital, thus illustrating the manner in which problems of investigation and treatment of disease are faced.

The field covered is wide, and the articles have been carefully compiled and edited. Dr. Abrahams breaks the ice with one on modern views of stomach diseases, which is an example of the lucidity that has been uniformly attained. The author deals critically with the conceptions of the infective and neurogenic origin of peptic ulcer, and sums up very fairly the relative claims of medical and surgical measures in treatment. An operation confers no immunity from the perils of dietetic indiscretions and careless habits, and is rather an incident in the course of prolonged dietetic treatment, though certain indications for operation are universally accepted—perforation, repeated haemorrhages, intractable pain, and gross mechanical deformities. Medical treatment, however, must be adequate and prolonged, rest being the principal requirement. Mucin may be given by mouth, or intravenous injections of non-specific protein or intramuscular injections of histidine, but these methods have not yet been subjected to sufficient trial. The early diagnosis of cancer is still a tragic difficulty ; no specific methods are known, and the onset is usually insidious. The methods of intragastric photography are discussed, but technical difficulties are great. Dr. Carlill deals with epilepsy, especially noting the medico-legal aspects of the post-epileptic state, and compares conditions with similar symptoms, such as hypnotic, epileptic, traumatic, and hysterical dissociation. Another long and interesting paper is on the modern aspects of gall-bladder disease. The subject is dealt with from the clinical point of view ; the findings at operation are enumerated, their antecedents analysed, and the symptoms by which they may be recognized discussed. The importance and frequent occurrence of cholecystitis and its complications are hardly yet sufficiently appreciated, and Mr. Arthur Evans's admirable little monograph deserves a wide circulation. In the treatment of the pathological gall-bladder something may be done by medical means, but the author concludes that the treatment of cholecystitis is cholecystectomy, and stones in the gall-bladder should be treated in the same way. Thus only can permanent cure and immunity from complications be obtained. The problems of malignancy still bulk largely in modern medical thought. In many of the papers mention is made of cancer as a complication in a particular diseased organ, as in the stomach and gall-bladder already cited, and in Mr. William Turner's article on chronic mastitis. Mr. Stanford Cade, one of the editors, deals with radium therapy of cancer of the breast and mouth. The prognosis in cancer of the breast can be materially improved by the judicious, careful, and expert use of radium either as the sole method of treatment or in combination with surgery. Early recognition of cases and timely intervention is essential, since no known method of treatment prevents visceral or skeletal metastasis. The unfavourable prognosis in cancer of the tongue under older conditions is well known. The author believes that total disappearance of neoplasm, including glandular metastasis, can be achieved by means of radiation ; and in the few years that radiation has been used it has reached equality of status with surgical excision as regards operable cases. In inoperable cases it is the only available method of treatment. In surgically hopeless cases palliation given by radium and *x* rays is certainly worth while from the patient's point of view.

Many short papers fill this useful conspectus of modern treatment ; among these special mention must be made of an excellent review of the claims, methods, and results of manipulative surgery by Mr. Brockman. The editors have done well in introducing among the medical articles a paper by the secretary of Westminster Hospital on aspects of hospital management, which discusses the status of the voluntary hospitals *vis-à-vis* municipal hospitals, the duties of the lay governors, their relations to the medical and nursing staffs, the rights of patients, and the provision of funds. In a teaching hospital such as Westminster the medical school and research departments have to be considered as well. At this time, when the development and extension of Westminster Hospital are in immediate prospect, this thoughtful article will be valuable to the hospital itself, but the principles enunciated are of wide application, seeing that the continuance of the voluntary hospital system as it stands has been declared by a Royal Commission to be, in the broadest sense, in the best interests of the sick—rich and poor alike. Reports of post-mortem and laboratory examinations and reports of medical, surgical, and obstetric registrars fill nearly half the volume.

[1] *Westminster Hospital Reports*. Vol. xxii, 1929–1933. Edited by Stanford Cade and R. J. V. Pulvertaft. London: H. K. Lewis and Co. Ltd. 1934. (Pp. ix + 428 ; 8 figures. 7s. 6d. net.)

A HISTORY OF EMBRYOLOGY

Much knowledge, and of a varied kind, is required by one who would write an adequate history of embryology, for the subject has always been of interest to mankind. He must, in the first place, be trained in scientific methods. He must be a good classical scholar. He must be somewhat of a philosopher and somewhat of an ecclesiologist. Above all, he must have read widely, and digested what he has read. Dr. JOSEPH NEEDHAM has all these qualities, with the result that he has produced such a *History of Embryology*[2] as makes the reader anxious for the second volume, which is to bring the story up to date. It stops at present with the work of Lamarck at the beginning of the nineteenth century. It would be pleasant to learn whether any of the author's knowledge is atavistic, for he bears the honoured name of Needham, who began as a surgeon in practice at Bridgnorth, and then published in 1667 the *Disquisitio Anatomica de Formato Foetu*.

Dr. Needham devotes the first chapters to the views held in antiquity about development. He pays a tribute to Aristotle and Galen for the work they did, and comes to the conclusion, at which William Harvey arrived many years ago, that it was better not to praise or dispraise, for all did well. This part of a subject which might have been dull reading is lightened by little interludes such as the quotation from the *Epistolae Obscurorum Virorum*, the fun of which is not yet sufficiently appreciated, and by extracts from Philemon Holland's translation of Pliny's *Natural History*.

Embryology from Galen to the Renaissance was mostly speculative, and reached its lowest depth, Dr. Needham thinks, in the time of St. Hildegard, about 1150: her ideas on the entry of the soul into the embryo are shown in a well-reproduced illustration taken from a contemporary manuscript. The Jewish and Arabian writers of

[2] *A History of Embryology*. By Joseph Needham, Sc.D. London: Cambridge University Press. 1934. (Pp. 274 ; 40 figures. 15s. net.)

the period are considered, and their work is proved to be negligible. Leonardo da Vinci, as in everything else that he did, was for the most part minutely accurate, though even he made a slip occasionally, as when he draws the human placenta as cotyledonous. But modern embryology really began in the seventeenth century, and to Sir Thomas Browne is assigned the series of observations in his laboratory at Norwich which entitle him to be looked upon as one of the first to undertake experiments in chemical embryology. The work of Harvey is naturally considered with sympathetic attention, and he is given due credit for the treatise on development, though it is known that many of his observations were destroyed and that he lost himself in his speculations on the calidum innatum. After Harvey came the microscope, which opened a whole new world of thought. A few years later the great teaching of William Hunter and of Smellie advanced practical embryology, whilst Boerhaave, Haller, Caspar Wolff, and their contemporaries fought the great battle of preformation and epigenesis. Here Dr. Needham leaves his history, pointing out how much still remains to be done.

"Experimental embryology, morphological embryology, physiological embryology, and chemical embryology form to-day a vast range of factual knowledge, without one single unifying hypothesis. . . . We cannot doubt that the most urgent need of modern embryology is a series of advances of a purely theoretical, even mathematico-logical nature. Only by something of this kind can we redress the balance which has fallen over to observation and experiment; only by some such effort can we obtain a theoretical embryology suited in magnitude and spaciousness to the wealth of facts which contemporary investigators are accumulating day by day."

This book, by showing what has been done and where it has been done (for there is an excellent bibliography), will help materially in the advance. The history began as part of a monograph published in 1931 in the form of lectures delivered at the University of London. The present elaboration is dedicated to Charles Singer, to R. C. Punnett, and to Dorothea Moyle. It has a very good index, many illustrations, and the format for which the Cambridge University Press is justly noted.

EXPERIMENTAL PHARMACOLOGY

HEFFTER'S Textbook of Experimental Pharmacology[3] is at last approaching its completion, for the third section of the third volume has now appeared, and a final section and the general index are promised for early next year. The section under review contains some 700 pages, dealing with twenty heavy metals. Half the volume is devoted to the subject of lead, and three-fifths of the remaining space to articles on silver, copper, and gold, while the metals chromium, vanadium, niobium, tantulum, titanium, palladium, iridium, rhodium, zirconium, tin, cadmium, osmium, ruthenium, thallium, indium, and gallium are disposed of in 130 pages.

The article on lead, by Dr. F. F. Flury, is very exhaustive, and gives interesting details of the new techniques that have been devised for estimation of this metal. Several of these are capable of detecting less than one-thousandth of a milligram, while Behrens's radioscopic method will detect one-millionth of a milligram and permits the quantitative estimation of one-thousandth of a milligram. Great attention has been paid in recent years to the fate of lead in the body, because the introduction of tetra-ethyl lead as an "anti-knock" constituent of petrol called for a careful study of its possible effects on the community. A noteworthy feature of the article is the illustrations, some of which show radiograms of the skeleton in lead poisoning, while others are termed "spodograms," a name given to prints made by sections which contain radio-active material.

The contribution on silver, by Professor W. Heubner, gives a full account of the pharmacology of this metal, and contains some fine coloured illustrations showing the mode of deposition of silver in the skin in argyria. Dr. H. Schlossmann, who writes on gold therapy, includes an account of the action of sanocrysin in tuberculosis. He adopts Heubner's conclusion that gold does not here act as a true chemotherapeutic agent, but that the treatment resembles a form of non-specific protein therapy. The other articles contain nothing of outstanding interest, but are competent reviews of their respective subjects.

[3] *Handbuch der Experimentellen Pharmakologie.* Band iii, 3 Teil. By A. Heffter and W. Heubner. Berlin: J. Springer. 1934. (Pp. 1503–2188. RM. 78.)

SHORT HERTZIAN WAVES

Dr. ERWIN SCHLIEPHAKE has now issued a second edition[4] of his work on short-wave therapy (Kurzwellentherapie). This is not a treatise on penetrating *x* rays and radium rays, but on the therapeutic uses of waves of the Hertzian type, which differ from those employed in ordinary "wireless" in their short wave-length. The method, which is a new one, is the outcome of the researches of Dr. Schliephake himself, and a full review not only of clinical results, but of the experimental work upon which they are based, is given in the present monograph. The method is one which may have great therapeutic possibilities, especially in various inflammatory conditions, more particularly perhaps in those affecting the lung, pleura, and mediastinum. It is hardly necessary to add that special apparatus—which is fully described—is essential for these treatments.

In his very clear little book, *Radio Round the World*,[5] Mr. A. W. HASLETT has given a scientific yet popular account of the fundamental principles upon which "wireless" waves are produced and transmitted. The general idea of wave motion is clearly explained, as well as the relations of the different regions of the electromagnetic spectrum, from the longest waves of the Hertzian group to the most penetrating gamma rays. Incidentally, he refers to the use of the short Hertzian waves in medicine: these are the rays referred to in Dr. Schliephake's book on short-wave therapy.

CHARTING THE SUBCORTICAL FIBRES

In a work on the *Intercortical Systems of the Human Cerebrum*,[6] Professor JOSHUA ROSETT has described a new and very original method of research which has been devised by him for tracing the course of the subcortical fibres of the brain. The method was explained by the author before a committee of the Association for Research in Nervous and Mental Disease in Boston, and approved; and it will doubtless be studied with interest by neurologists in this country. The brain is thoroughly fixed in formalin or alcohol, and the hardened organ stripped of its membrane and wrapped in several layers of gauze and three to five layers of bandages. It is then placed in an air-tight steel vessel capable of sustaining several thousand pounds of gas pressure. By a suitable contrivance CO_2 is admitted to the vessel under pressures varying from 850 to 1,200 lb. and the brain is subjected to this pressure for one or two days in order to allow the gas time to permeate it. A valve connected with the vessel

[4] *Kurzwellentherapie die medizinische Anwendung elektrischer Höchstfrequenzen.* By Dr. Erwin Schliephake. Zweite Auflage. Jena: G. Fischer. 1935. (Pp. 196; 143 figures. RM. 10; geb., RM. 11.50.)

[5] *Radio Round the World.* By A. W. Haslett. London: Cambridge University Press. 1934. (Pp. 196; 22 figures. 5s. net.)

[6] *Intercortical Systems of the Human Cerebrum. Mapped by Means of New Anatomic Methods.* By Joshua Rosett. New York: Columbia University Press; London: H. Milford, Oxford University Press. 1934. (Pp. 135; 41 figures. 15s. net.)

is then opened for one-fiftieth of a second, when an "internal explosion" of the tissue takes place, expansion of the brain being prevented by the resistance of the bandages. Instead of disintegrating, the white substance of the brain is found to be dissected along natural lines of cleavage; at points where there is much interweaving of fibres the tissue remains practically intact, while in other places the white substance is shown to consist of thin, closely apposed laminae of fibres, the course of which is rendered visible by their dissociation. A cerebrum prepared in this manner is stated to be capable of dissection by hand with the greatest ease, and the white substance containing the intercortical systems underlying the fissures comes away whole at the least touch, and can be divided into blocks for further study.

By an elaborate method the author has succeeded in recording the exact situation of each of the numerous blocks, so that the surface of the cerebrum can be reconstructed in its natural form and the intercortical relations of the tracts of fibres studied in detail. Descriptions and figures are given of the intercortical systems of all the main fissures and sulci of the hemispheres. As a result of his studies the author has been led to believe that the fissures and sulci have a significance different from that which is usually described by anatomists.

Notes on Books

MAY and WORTH'S students' manual on *Diseases of the Eye* has had a success which has been deserved. In a convenient compass there were given the fundamental facts of ophthalmology in such a form that they could be well appreciated by the student and general practitioner. The book has now reached a seventh edition, under the direction of Mr. MONTAGUE HINE.[7] The material has been extensively revised and partly rewritten, particularly the chapters dealing with diseases of the lachrymal apparatus, glaucoma, cataract, squint, and the section on detachment of the retina; further, many new and well-considered illustrations have been added. Mr. Hine has done his work well, and is to be congratulated thereon. We have no doubt that under the new editorship this manual will retain its popularity with students.

Health-Giving Dishes[8] is a book of daily menus and individual recipes in use by Dr. BIRCHER-BENNER at the Sanatorium at Zurich. They are based on what Dr. Bircher-Benner calls the "new food science." This science, as laid down in the introduction, is a mixture of physiological half-truths and fantasies. The individual recipes offer many admirable ways of serving vegetables, fruits, and cereals, but the number of people who will prove able to eat raw vegetables to the extent advocated in the final section, "Elaborate Menus with Much Raw Food," will probably be quite limited. Few human beings are capable of living as herbivora.

The University of London Animal Welfare Society has published a monograph[9] in which a convincing case is presented for the abolition of the gin trap. It is perhaps surprising that a case should have to be made out for the abolition of so barbarous a practice, which is, however, a widespread method of catching rabbits. The photographs of animals trapped in such a way make the reader turn eagerly to the sections dealing with humane methods of extinguishing vermin. It is to be hoped that the Gin Traps (Prohibition) Bill, which was given a first reading in the Lords on December 5th, will eventually become law.

[7] *A Manual of Diseases of the Eye.* By Charles H. May, M.D., and Claud Worth, F.R.C.S. Seventh edition, revised by Montague L. Hine, M.D., F.R.C.S. London: Baillière, Tindall and Cox. 1934. (Pp. 505; 350 figures, 23 plates. 15s.)

[8] *Health-Giving Dishes.* Compiled by Bertha Brupbacher-Bircher, manageress of Dr. Bircher-Benner's Sanatorium, Zurich, Switzerland. London: Edward Arnold and Co. 1934. (Pp. 239. 6s. net.)

[9] *Man versus Rabbit.* By A. H. B. Kirkman, F.R.C.S.Ed., F.Z.S. Second edition, entirely rewritten. London: The University of London Animal Welfare Society, 68, Torrington Square, W.C.1. (Pp. 74. 1s.)

Preparations and Appliances

A PYROMETER FOR STEAM STERILIZERS

Mr. KENNETH BLACK, F.R.C.S., writes:

One of the problems of the operating theatre is to ascertain the temperature reached in the centre of a packet, tin, or drum of dressings in a sterilizer. This temperature is very different from that of the superheated steam round the outer side of the container, although the latter alone is registered, either by a thermometer projecting into the sterilizer and capable of being read from the outside, or, more commonly, by means of a pressure gauge.

In many of our hospitals the sterilizers are inefficient. It is possible to argue that if no mischief has been proved to have resulted from the ordinary methods of sterilization, it matters little whether or not a very high temperature has been reached in the middle of the packet or tin of dressings. It would be equally possible to argue, however, that if no mischief has resulted from the use of towels and dressings

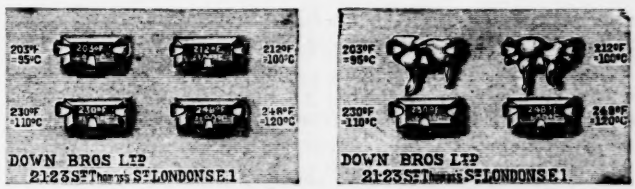

FIG. 1.

FIG. 2.

which have not been sterilized at all, then sterilization is a superfluous precaution. It is difficult to believe that failures to detect and record mischievous results are likely to convince surgeons that sterilization by sterilizers is useless. Probably they will continue to believe that when dressings and overalls are being "cooked," the aim should be to obtain in the centre of each drum or packet a temperature at least as high as that of boiling water. There is no difficulty in ascertaining this temperature if a special high-registering thermometer is used, but such a thermometer is unsuitable for ordinary use, being costly, easily broken, and inconvenient.

The pyrometers illustrated are cheap and perfectly reliable. In Fig. 1 there are four oblongs of fusible metal each of which has its own melting-point, so that a range from 203° F. (95° C.) to 248° F. (120° C.) is recorded. A cheaper type is illustrated in Fig. 2, with one oblong only of fusible metal melting at 212° F. Each oblong of metal costs only threepence.

The method of use is to bury a pyrometer from time to time in the centre of the dressings before sterilization and to note the result when the dressings are unpacked. A point worthy of interest is that superheated steam does not penetrate to the centre of the packed, expensive, and standard type of metal drum with side holes any more readily than it does to the centre of the cheaper, plain metal box without holes and with a lid closed over a layer of cotton-wool. In fact, the latter type is bacteriologically safer.

A CALCIUM FOOD PRODUCT

Allen and Hanburys Ltd. are putting on the market a new preparation, "calcydic," in the form of chocolate-flavoured granules containing calcium, phosphorus, vitamin D, and glucose. Each drachm contains dicalcium phosphate 7½ grains, vitamin D 1,500 international units (equivalent to 2½ drachms of good cod-liver oil), and pure glucose 30 grains. The indication for calcydic is deficiency of lime salts in children and adults. It presents calcium in an assimilable, palatable, and non-irritant form, in conjunction with phosphorus, vitamin D, and glucose. The granules are sold in 8-oz. and 16-oz. tins at 2s. 3d. and 4s.

A CLASSIFICATION OF INDUSTRY

FIGURES FROM THE CENSUS

The volume of about 750 foolscap pages entitled *Census of England and Wales, 1931 : Industry Tables*, is made up of statistics derived from the last census of the population. It is published by H.M. Stationery Office (price 32s. 6d. net). Statistics are given for the country as a whole, for the twelve geographical regions into which the country has been divided, for counties and large urban areas, and, in a condensed form, for smaller urban areas and for rural districts. A companion volume, entitled *Classification of Industries* (price 4s. 6d. net), which contains an enumeration of the various industries and services known to exist in this country, is published concurrently. The statistics relating to occupations, apart from industry, were published last year, in a separate volume (*Census of England and Wales, 1931 : Occupation Tables*, price 30s. net).

OCCUPATION AND INDUSTRY

Mankind in its working capacity may be grouped for statistical purposes according to two classifications—the one occupational and the other industrial. Much confusion exists as to the meaning of these terms, which are often used as though they were synonymous. It may be well, therefore, to define the sense in which they are employed by the General Register Office.

Occupation.—The occupation of any person is the kind of work he or she performs ; and this alone determines the particular group in an occupation classification to which the person is assigned. The nature of the factory, business, or service in which the person is employed has no bearing upon the classification of his occupation, except to the extent that it enables the nature of his duties to be more clearly defined. This can be made clearer by an example. A " fettler " (that is, a cleaner) " of castings " may be employed in a brass foundry, a bedstead works, an engineering works, or in any kind of works in which articles are cast from molten metal ; but the nature of the works in which he is employed has no bearing upon his occupation, and all " fettlers of castings " should be classed to the same occupational group.

Industry.—The industry in which anyone is engaged is determined (whatever may be his occupation) by reference to the business in, or for the purposes of, which his occupation is followed. As a single business will employ a number of individuals of widely varying occupations for the purpose of affording a particular service or creating a particular product, it will be seen that the industrial classification differs essentially from the occupational, in that the latter only takes account of the nature of the work performed by the individual, while the former has regard only to the nature of the service or product to which his labour contributes. The man who is occupationally a carpenter or a carman, for instance, is classified industrially to building, if employed by a builder, or to brewing, if employed by a brewer.

NEED FOR A DUAL CLASSIFICATION

It is a person's occupation, the nature of his work, which determines the type and degree of the strains, physical or mental, to which he is subjected, and the conditions generally under which his working life is lived. These are in the main independent of his industrial association—that is, of the industry or service which affords him employment. Hence a satisfactory occupational classification must ignore the irrelevant consideration of industry, grouping together, for example, all clerks, whether employed in insurance, trade, or railway transport, etc. But industrial association, grouping together all persons, whatever their occupations, who contribute their labour to a particular service or product, is also of prime importance, largely from the economic point of view—for example, as affecting unemployment, and as in the aggregate affording a record of industrial development. In the absence of full recognition of the fundamental difference between these principles of grouping, classifications have been framed which, though described as occupational, prove on examination to be largely industrial. But a hybrid classification cannot serve either purpose adequately ; hence the need for the dual classification if information is to be provided upon both these important aspects of national life.

The statistical analyses in the Industry Tables of the 1931 Census are on a more comprehensive scale than any hitherto published in this country. The volume includes tables which have been introduced to meet the specific requirements known to exist amongst Government departments, trade and professional associations, and large industrial and commercial concerns.

SEPARATION OF EMPLOYED AND UNEMPLOYED

An innovation has been made by the identification for the first time on this occasion of statistics of persons out of work at the date of the Census. In view of the amount of unemployment then prevailing and of its widely varying incidence, it was felt that the industry record would be prejudiced if employed and unemployed were classified together without distinction, particularly in the more seriously affected undertakings like coal mining, shipbuilding, etc., in respect of which it was known that there were large numbers of former workers who had been unemployed for long periods and who, in many cases, had no reasonable prospect of ever being employed in those industries in the future.

The presentation of figures exclusive of persons out of work will provide a much truer measure of the actual growth or decline of any particular industry. It should be noted that the Census inquiry applied uniformly in respect of all individuals regardless of whether they were, or were not, in receipt of any unemployment benefit, or whether they were registered at an Employment Exchange. In any comparison with contemporaneous statistics dealing with unemployment, therefore, the circumstances in which the material has been obtained must be borne in mind.

Classification on a purely industrial basis was first used at the 1921 Census, and the figures now published represent the first strictly comparable Census material available to measure the ups and downs of the industries of the country. Unemployment in both Census years robs the figures of some of their value, but even so, the decline of certain industries (agriculture, cotton, etc.) and the growth of others (bricks, electrical, vehicles, silk) are noteworthy. The violent disturbance of industry by the war and the very considerable readjustment which has taken place in the last decennium explain some of the recent phases of industrial development brought out by this analysis of nearly nineteen million people.

The Meteorological Office has issued a pamphlet of forty-six pages setting out the averages of bright sunshine for the British Isles for periods ending 1930. This publication contains two main tables, the first of which gives average monthly totals, daily means and percentages of possible duration of sunshine for all stations having ten years or more of observations in the period 1901–30. The second table gives for eighteen selected stations the average and percentage number of days in each month with sunshine within stated limits of duration. The total number of stations for which averages are printed is 172, of which thirty-one are in Scotland and nine in Ireland. For most stations the records cover a period of twenty years or more. The data show that the average annual duration of recorded sunshine varies from over 1,800 hours in the Channel Isles and on the South Coast of England to under 1,100 hours in the Shetlands and in certain industrial areas where heavy smoke pollution occurs. At all stations May or June is the sunniest month, and December or January the dullest. The pamphlet (M.O. 377, price 1s.) can be obtained through any bookseller from H.M. Stationery Office.

British Medical Journal

SATURDAY, JANUARY 26th, 1935

THE PROBLEM OF PEPTIC ULCER

Since it is estimated that one of every ten persons suffers at some time in his life from peptic ulcer, the problem of its causation and treatment becomes a subject that demands the interest and careful attention of the medical profession. Periodic reviews of our knowledge are therefore valuable, and especially symposia to which a number of workers contribute from different points of view. The latest volume of the *St. Bartholomew's Hospital Reports* contains a useful contribution to the matter.[1] Lord Horder, in introducing the subject, refers to peptic ulcer as one of three baffling diseases, characterized by chronic ulceration, though the special conditions under which peptic ulcer arises differ entirely from those contributing to chronic ulceration of the colon and ulcerative endocarditis. In each, however, bacterial infection plays a less significant part than the special situation of the lesion. Peptic ulcer occurs only in portions of the alimentary tract where hydrochloric acid has access.

The classical experiments of Dr. Charles Bolton showed that though areas of necrosis, acute ulcers in fact, can readily be produced in the stomachs of animals such as cats and monkeys, these ulcers invariably heal in ten days or so ; and that by simple damage to the gastric mucosa it is impossible to produce a chronic ulcer. By increasing the acidity of the gastric juice, however, the healing of such acute ulcers was delayed, and they developed into typical chronic ulcers, having all the features of the peptic ulcer as it occurs in man. Similar results were obtained by combining the production of an acute necrosis of the gastric mucosa with constriction of the pylorus. With the delayed emptying of the stomach brought about in this way it was unnecessary to raise the acidity of the gastric juice ; the unduly prolonged action of the normal secretion on the acute ulcer was sufficient to prevent its healing and to convert it into a chronic ulcer. The mucous membrane of the duodenum appears to be normally protected by the highly alkaline secretion of Brunner's glands ; and, indeed, the stomach mucous membrane can tolerate exposure to a certain degree of acidity over a certain length of time, but if the secretion is unduly acid or is retained in the viscus too long, it is capable of producing a progressive destruction of tissue. Thus, as Professor Kettle points out in discussing the pathology of peptic ulceration, the chronic gastric ulcer is essentially a biochemical lesion ; but it still remains to be proved that the chemical action of the gastric juice is capable of producing ulceration in an absolutely intact mucous membrane. But in ordinary conditions of living erosions of mucous membrane may take place from scratches by rough pieces of food (as well as by infections) swallowed and so attacking the interior of the viscus or carried by the blood stream to form infective infarcts. How often do we hear from the patient of the onset or recurrence of symptoms after influenza or other minor infection! That a not inconsiderable part is played by the nerves supplying the stomach, and that a gastric erosion can be produced, too, entirely by nerve stimulation, is pointed out by Professor Woollard in his survey of recent knowledge of the anatomy and physiology of the stomach. Chronic peptic ulcer is then the result of two processes. An initial destruction occurs of an area of mucous membrane due to trauma, vascular or nerve disturbances, or the action of bacteria ; if the stomach is unhealthy in the sense that it is functioning unphysiologically, healing of such lesions may be delayed, and the action of the acid secretion on the area of devitalized mucosa result in the development of the chronic ulcer. Of these two processes the second is probably far the more important, and it is much more easily controlled. Professor Kettle is of opinion that the association of chronic gastritis with peptic ulcer is as likely to result from the presence of the ulcer as to precede it.

The problem of treatment, then, becomes an attempt to raise the patient's resistance to infection, to eliminate as far as possible sources of infective absorption, and above all to try to correct the abnormality of the gastric juice. Although there is still considerable divergence of opinion on the treatment of peptic ulceration of the stomach, physicians and surgeons are agreed, as Mr. Girling Ball points out, that in the early stages, whether the ulcer be recent or old-standing, a course of medical treatment should always be given a trial before surgical intervention is attempted. It is unfortunate for the attainment of balance in this otherwise excellent symposium that no detailed account of medical treatment is included, since many physicians would not consider treatment adequate unless complete rest of body and mind, freedom from worry and anxiety, elimination of alcohol, tobacco, and infective sources in nose, throat, and teeth were attained, in addition to the customary dieting and alkaline powders. Dr. Geoffrey Bourne reports a series of twenty cases treated with an attempt at complete rest to the stomach by introducing the food directly into the duodenum by a tube. His method of passing the tube through the mouth does increase the salivation and swallowing and is not so comfortable for the patient as a duodenal tube introduced through nose and nasopharynx, as was suggested in the original method. The surgical treatment adopted by Mr. Girling Ball has been partial gastrectomy for gastric ulceration, for it was felt that unless the ulcer itself was removed the patient would

[1] *Saint Bartholomew's Hospital Reports*, vol. lxvii. London: John Murray. 1934. (Pp. 279 ; illustrated. 21s. net.)

still remain liable to one of the serious complications, such as haemorrhage or perforation.

In the series of 1,067 cases followed up by Mr. R. W. Raven and the officers of the follow-up department at St. Bartholomew's, of those having adequate medical treatment 55 per cent. of the 357 cases of gastric ulcer showed satisfactory results, but eleven patients suffered from perforation after medical treatment. In the cases treated surgically, 67 per cent. of those on whom partial gastrectomy was performed did well, and 55 per cent. of those who had posterior gastro-enterostomy, while the immediate mortality was 1 per cent. higher in the latter group. In 132 cases of duodenal ulcer 53 per cent. responded well to medical treatment, and 4.5 per cent. suffered from perforation either during or after medical treatment. In those submitted to surgery 68 per cent. showed satisfactory results, and slightly better results appeared to follow when the appendix was removed at the same time as gastro-enterostomy was performed. After medical treatment death occurred in over 8 per cent., while after surgical measures the immediate and late mortality totalled 10 per cent. In 21 per cent. of cases of duodenal ulcer the results of operation were unsatisfactory, and there is no doubt that the "surgical failures" are in a worse position than the "medical failures." The problem of peptic ulcer remains unsolved, but this publication from the Bart's school will help much to advance our knowledge and to point the way to further work.

WATER BACTERIOLOGY

While the methods for the bacteriological examination of water supplies carried out in most public health laboratories in this country follow in general similar lines, considerable variation exists in the technique employed by different workers as well as in the relative importance which they attach to the current tests. For this reason their statements of results are often not readily comparable, so that a report which conveys to one observer familiar with the procedure used a clear-cut impression of the hygienic characters of a water may present to another only a blurred picture or even leave him uncertain whether the conclusions drawn are sound. With the aim of advancing towards greater uniformity the Ministry of Health issued last year a report correlating the water tests at present in vogue, and suggesting standards for routine work which should contribute to this important object.[1]

The standard examinations recommended are the agar count at 20°–22° C., the agar count at 37° C., and the *coli-aërogenes* test. The gelatin count at 20°–22° is discarded in favour of the agar count at these temperatures, since agar is free from the disadvantage of liquefaction, which in any case has no special significance. Occasional tests are those for faecal streptococci, *Cl. welchii*, and the typhoid group, the last of which can only be undertaken in well-equipped and adequately staffed laboratories. The confirmatory tests for the lactose fractors are clearly summarized. While MacConkey's agar is the medium ordinarily used, endo-agar and eosin-methylene-blue agar are also of value, the last especially on account of the facility which it offers for the early differentiation of *B. coli* from *B. aërogenes*. A convenient table is provided for the distinction of *B. coli* types I and II, intermediate types I and II, *B. aërogenes* types I and II, and *B. cloacae*. On the relative importance of the seven types the pronouncement is made that *B. coli* types I and II point strongly to recent excretal pollution. The remaining types, by workers in Great Britain, should be taken seriously as suggestive of such pollution, though in North America and tropical countries generally they are regarded as of little significance, being often abundantly present in waters otherwise satisfactory. Directions are given for the carrying out of the tests specified in the differential table and also for certain other tests such as the gas ratio and the tests for streptococcus and *Cl. welchii*.

The concluding section, on interpretation of results, is of special interest not only to the bacteriologist, who as the report lays down has both the right and the duty to offer an opinion, but also to the medical officer of health, who, in taking action with regard to a supply, must frequently look for support or guidance to bacteriological findings. The agar counts are of value chiefly in the routine examination of the same supply, when a sudden rise calls for explanation. With filtered waters they form a test of the percentage efficiency of filtration, and a sudden rise is the usual signal of defect in the filter beds. In the case of single samples the agar counts are less precisely informative, but if a main spring or settled deep well gives a count above 10 per ml. at 37° surface water is probably entering the supply, which may involve risk to consumers. The ratio of the agar count at 22° to that at 37° may also be instructive. A high ratio may have little significance: a low ratio may point to contamination.

The *coli-aërogenes*, or presumptive *coli*, test is the best bacteriological index of pollution. The smaller the sample yielding the reaction the worse the quality of the water. As the test proceeds by a method of random sampling its results are at times capricious, and have led to differences of both observation and interpretation between analysts working on the same water. To reconcile these discrepancies and obtain approximate accuracy it is recommended that a probability formula devised by Greenwood and Yule should be applied to each series of observations, and tables are shown, computed by McCrady on a modification of this formula, which make it possible to express the results of testing a number of samples of varying quantities of water in terms of a single figure—namely, the probable number of bacteria of the *coli-aërogenes* group present in 100 ml. of water. The utility of such a uniform expression for the comparison of observations by various

[1] Reports on Public Health and Medical Subjects, No. 71. The Bacteriological Examination of Water Supplies. London: H.M. Stationery Office. 1934. (9d. net.)

workers on different waters is self-evident. Since experience hitherto suggests that in most cases the presumptive *coli* reaction means true *B. coli*, it may be regarded by itself without further differentiation as an adequate index of faecal pollution, unless the assumption is strongly discrepant with the known facts. Numerically, a figure of not more than 2 presumptive *coli* per 100 ml. of water should be taken as satisfactory, while 10 or more should provisionally condemn a water as unsuitable for domestic use. Between these upper and lower limits the type-differential tests should be applied, and judgement given according as the types found are on the one hand true *B. coli* or on the other hand intermediate or *aërogenes* or *cloacae*.

The Chief Medical Officer of the Ministry, in an introduction, deprecates any suggestion that the report constitutes a new contribution to the science of bacteriological analysis of water, but even regarded as a plain statement it is one which is both practically and administratively of the first importance, and is sure to be read with attention and interest by all concerned. No medical officer of health or water bacteriologist can afford to be ignorant of its contents.

HAEMATOLOGY IN CHILDHOOD

The various disturbances of the blood and blood-forming system in childhood are the object of much investigation, and the results obtained have important applications in prophylaxis and treatment. The common type of nutritional anaemia in infancy, due to an iron deficiency, is certainly better understood than it was a few years ago, but not all anaemic infants have suffered from defective iron storage or intake. Because of this Czerny and his pupil Kleinschmidt, a long time before the modern development of interest in the subject, postulated the presence of a constitutional anomaly or hereditary predisposition to impaired function of the blood-forming system. This aspect of the subject in infancy still requires further elucidation, but in older children various other factors which operate in conjunction with an iron-deficient state are discussed in a contribution to the current issue of the *Archives of Disease in Childhood*,[1] by Drs. J. C. Hawksley, R. Lightwood, and Miss U. M. Bailey. In particular these authors draw attention to the occurrence of achlorhydria, which they found present in twelve out of thirteen successive patients with simple iron-deficiency anaemia investigated by the fractional alcohol test-meal. The ages of these patients ranged from 8 months to 10 years, and in three cases the achlorhydria was still present a year or more after cure of the anaemia by iron. It seems clear that the acid defect is not secondary to the anaemia, and that while the secretion of hydrochloric acid is not essential for the absorption of iron, the latter is certainly better carried out when gastric acidity is normal. The findings are of some importance in regard to the idiopathic microcytic anaemia of adults, especially as the achlorhydria may persist. Another factor influencing the development of iron-deficiency anaemia reported in the present paper is intestinal disease. Two instances of intestinal polypus are cited, no clue having been given in life to this condition save for the terminal passage of blood per rectum in one. A more obvious cause of occult haemorrhage, producing anaemia which responded to iron therapy, is ulcerative colitis in a child. Dietetic factors enter into consideration in this type of illness as well as defective absorption due to chronic diarrhoea. Similar factors are also present in the microcytic type of anaemia found in coeliac disease. A characteristic response to iron therapy is also found in the recovery stages of the haemolytic anaemias, and in some cases of anaemia accompanying congenital syphilis, rickets, and cardiac rheumatism. A different aspect of haematology in childhood is represented by another paper in the same journal[1] in which Dr. P. Klenerman discusses the blood changes found in infantile sepsis. This condition included skin lesions (abscesses, boils, and pustules), otorrhoea, gastro-enteritis, and pyuria occurring soon after birth and up to the end of the first year. As to the haemoglobin level, this is but little reduced by mild sepsis, nor do the number of red cells fall below the normal limits. Investigation of the white cells reveals various difficulties, particularly in connexion with what are to be accepted as normal standards in the early period of life. Among the data in a small group of patients the following may be quoted as of interest: eosinophils are increased when the patient is putting up a resistance to infection and would appear to be a favourable phenomenon; a lymphocytosis was found during gastro-intestinal upsets; and during the phase of recovery in septic states it was sometimes possible to trace a decrease in the "shift to the left," accompanied by an increase in lymphocytes and eosinophils. The main feature of these blood studies, however, was the great variability in the findings, and more work on this subject is obviously desirable if the blood picture is to afford a clear guide to prognosis.

[1] 1934, vol. ix, p. 359.

[1] Ibid., p. 343.

PROGNOSIS IN ANGINA PECTORIS

Any authoritative figures which may help in the formulation of some rule on which to base prognosis in angina pectoris will be welcomed, if only for their value in life assurance rating. In this respect a number of significant points are given by Eppinger and Levine,[2] who studied 141 fatal cases of angina in which the average age at onset was 57 years and the average duration about four and a half years. The average duration of life was 2.3 years longer in those whose disease developed before the age of 50 than in those who commenced their attacks after that age. Cases of attacks of angina occurring at rest were compared with those in which patients complained of attacks almost exclusively on effort. Contrary to expectation, it was found that the duration of life after the onset of the disease, the age at death, and the blood pressure readings are not significantly different in the two groups. There is increasing evidence pointing to the importance of the hereditary factor. The careful attention paid by most insurance companies to the family history is thoroughly justified by the Boston figures—

[2] *Arch. Int. Med.*, 1934, liii, 120.

that those patients whose parents live to an average age of under 60 died 5.6 years earlier than the group whose parents lived to an average age of over 70. A novel suggestion by Eppinger and Levine implies that the transmission may be particularly by the female parent, and their figures would certainly lead one to attach more importance to the age at death of the mother of the proposer with angina, than to that of the father. Evans and Hoyle[1] conclude that tablets of glyceryl trinitrate rarely fail to relieve attacks effectively when they are used correctly. In their series the most valuable conclusion from our present point of view lies in the statement that the drug almost always prevented pain when taken immediately before exertion: "85 per cent. of patients using tablets in this way obtained great benefit, and a further 12.5 per cent. moderate benefit." Discussing the question of the value or possible harmful effect of artificial prevention of expected anginal pain, they consider that treated patients often undertook physical exertion which previously had been impossible, without any harmful effects. With due consideration given to the individual case, it follows that patients should not be made to discontinue physical exertion entirely; for the removal of customary exercise will often increase the worry and depression which are significant factors in the prevention of attacks of angina. A history of the details of the drug treatment employed have therefore a place in the insurance of the proposer with a liability to angina. A lighter note is struck by Philip Rezek,[2] in his more popular but very graphic account given in a lecture to the Calcutta Medical Club, in which he cites several interesting examples of familial angina. He also mentions the rather uncanny effect of what might be construed as hysterical imitation, quoting Osler's example of Senator Sumner, who died of angina pectoris, and whose two doctors also fell victims to attacks for the first time whilst treating him, one of these actually dying in his second seizure. Like asthmatics, angina patients must evidently be kept from mixing with, and possibly emulating, their fellows.

THE HOSPITALLERS

Colonel E. J. King is so well known as the historian and librarian of the Order of the Knights of St. John of Jerusalem that an enlarged edition of the work he published ten years ago is very welcome. He has brought it up to date, and it now appears with the amended title of *The Knights of St. John in the British Empire*,[3] an extension which was granted by the Charter of 1926. The history of the Hospitallers is well known, and the buildings and fortifications of the knights still stand in all their magnificence at Malta. Colonel King has limited himself to the history of the English Langue or *Tongue*, as he prefers to call it. He tells the story with a real love of the Order, and in a most interesting manner. He makes the Grand Priors live again. There were Raymond du Puy and Garnier de Nablus, whose good will to his neighbours still remains in evidence, for the cartulary of St. Bartholomew's Hospital contains a copy of the grant of a virgate of land at Rainham in Essex. It is dated 1190, and Garnier first witnessed it and afterwards confirmed it when he became prior. He tells, too, of the chivalrous Prior Robert Hales, who was beheaded on Tower Hill by Wat Tyler's mob in 1381 after it had burnt the priory at Clerkenwell. It may be noted here that Wat was not cut down by the lord mayor William Walworth, as is often stated, but by an esquire in attendance on the King who may or may not have been John Cavendish. But perhaps the best stories of all are those dealing with the two sieges of Rhodes and the defence of Malta: real epics, where the English brethren excelled themselves in fighting: L'Isle Adam and Oliver Starkey deserve to be held in everlasting remembrance. Then came the lean times. England as a Protestant country could no longer share in the Order, which was of necessity Catholic. Colonel King shows that the English Langue became extinct until it was revived in 1834. It drooped until 1858, when it took a new lease of life, proceeding from good to better, until it reached its present position as a world-wide organization throughout the British Empire under the protection of the reigning sovereign.

[1] *Quart. Journ. Med.* (New Series), 1934, cxi, 105.
[2] *Calcutta Med. Journ.*, 1933, xxvii, 197.
[3] *The Knights of St. John in the British Empire. Being the Official History of the British Order of the Hospital of St. John of Jerusalem.* London: St. John's Gate, E.C.1. 1934. (7s. 6d. net.; postage 6d.)

SURGERY OF BRAIN TUMOURS

In a recent communication[1] W. Tönnis contrasts the 60 per cent. mortality reported in 1913 for operations on tumours of the brain with the present rate of 10 to 20 per cent. He says that in meningioma, adenoma of the hypophysis, and acoustic neurinoma some 70 per cent. of patients are able after operation to return to work. The commonest form of tumour is the glioma (43 to 54 per cent.); next come the meningioma and the neurinoma (15 and about 11 per cent. respectively), although Cushing found pituitary adenoma more frequent than meningioma or neurinoma (18, 13, and 9 per cent. respectively). In the first two decennia 70 per cent. of tumours are in the posterior fossa, but in the next three supratentorial tumours predominate. Before the age of 20 over two-thirds of tumours are cerebellar gliomata. In the third and fourth decennia the vast majority of infratentorial tumours are furnished by the acoustic neurinomata and the rarer cerebellar angioblastomata. Of supratentorial tumours affecting the first, second, or fifth cranial nerves those in childhood are commonly hypophyseal duct cysts; in the age period 10 to 30, hypophyseal adenomata; from 20 to 40, suprasellar meningiomata or meningiomata of the olfactory cortex. Using these data and the usual methods of location Olivecrona has been able to foresee the nature and site of the tumour in 60 per cent. of cases: in 20 per cent. localizing signs are insufficient, and in the remaining 20 per cent. absent, so that location is only possible by ventriculography or arteriography. The latter is less risky. From the former a 9 per cent. mortality has been reported, but this can be reduced almost to *nil*, Tönnis states, by arranging for the operation to be done immediately afterwards. Aided by radiological methods various surgeons have been able, in well over 90 per cent. of cases, to predict accurately the site of the tumour. In treatment radiation has a very limited utility, and is best applied as a supplement (in some

[1] *Zentralbl. f. Chir.*, October 27th, 1934, p. 2489.

cases) to operation; for even in radiosensitive tumours—chromophile pituitary adenoma, medulloblastoma in the juvenile cerebellum, and glioblastoma—serious and even fatal oedema and haemorrhage may be caused. Primary decompression operations are dangerous. Operative mortality can be diminished—especially in meningioma—by making preliminary dispositions for blood transfusions if necessary; also by using anaesthesia by local means or by avertin, which is superior to ether in not inducing cerebral oedema or vomiting. Important technical points are a horizontal position; careful haemostasis; reduction of intracerebral pressure by puncturing the contralateral lateral ventricle (or in the case of posterior fossa tumours one or both posterior horns) before opening the dura; and reduction of the volume of the tumour, before excision, by diathermic excisions or suction. Tönnis recommends routine drainage, and in many cases protects the medulla by removing the arch of the atlas: control of the blood pressure is necessary throughout and after operation—a fall is usually due to haemorrhage and calls for transfusion. Operative treatment is generally inadvisable for malignant gliomata with short histories and marked psychic disturbances, and for gliomata of the corpus callosum, optic chiasma, or of the brain stem and its ganglia.

BOVINE TUBERCLE BACILLI IN MILK

According to a report by O. Ramlau-Hansen[1] recent Danish investigations show that the bovine type of tubercle bacillus is responsible for much more disease in man than was formerly suspected. Clinically, there is no difference in the behaviour of the bovine and human strains in the human body; and the author has succeeded in demonstrating no differences in the tuberculin reactions in patients infected by bovine and human strains respectively. There is, accordingly, no warrant for relaxing the campaign against tuberculosis in cattle on the assumption that it is a negligible source of infection in man. In the large Danish towns children can be provided with comparatively costly milk from tuberculosis-free herds subjected to a monthly veterinary examination and in the charge of persons under systematic medical supervision. The farmer who has a tuberculosis-free herd but who does not conform to all the regulations governing the supply of this special "children's milk" is paid no more for his milk than the owner of a tuberculous herd. The former's only consolation is that when his milk reaches a dairy and is mixed with supplies from other sources it serves to dilute the tubercle bacilli in them—a not unimportant factor. In the present economic crisis, which has hit the Danish farmer very hard, the wholesale destruction of cattle has become necessary to combat the evils of over-production. This measure, with its State provision of compensation, is a blessing in disguise, for it provides a unique opportunity for stamping out tuberculosis in cattle. The administrative campaign against the tuberculous cow in Denmark has made such progress that the authorities of Copenhagen are preparing for legislation which, when introduced in 1938, will provide that city with all the milk it needs from tuberculosis-free herds.

[1] *Nord. Med. Tidsskrift*, October 6th, 1934, p. 1329.

PREMEDICATION WITH AVERTIN

The approach of a surgical operation awakens in the minds of most people a sense of anxiety if not of dread. In some this is no doubt born from a fear of the unknown, but in others there is the added fear of unpleasant consequences. Of recent years it has become the practice to handle surgical cases with increasing gentleness, and the patient often drops off to sleep in his bed and wakes there some hours later to find that the ordeal is over. No recollection exists of the journey to the operating theatre, no memory remains of the induction of anaesthesia, and what has been termed "psychic shock" is reduced to a minimum. Many drugs, such as chloral, paraldehyde, and the barbiturates, have been employed to produce this effect, with or without the assistance of opiates. One of the most satisfactory of these, all things considered, is tribromethyl-alcohol or avertin, which has now been in use for some five or six years. Its mode of administration is simple. The patient, lying in his own bed, receives rather less than half a pint of warm avertin solution run slowly into the rectum. Within about ten to fifteen minutes he has gone gently to sleep and remembers nothing more for several hours. Although with avertin we have not yet reached the perfect pre-anaesthetic hypnotic, yet experience has proved it to be of great value, especially for the nervous patient and those undergoing thyroidectomy. Barlow, Fife, and Hodgins,[1] working in Cleveland, U.S.A., have recently published their observations on the use of avertin in 1,831 surgical cases. The dose of avertin was gauged by the weight, age, and general condition of the patient. A preliminary injection of morphine and atropine made it possible to reduce the dose of avertin, so that only 20 per cent. of the cases required the standard dose of 0.1 gram per kg. of body weight. This is a useful safety measure, as the authors found that 30 per cent. of cases had transient albuminuria during the twenty-four hours after operation, and 7 per cent. had casts in the urine. The majority of patients were given nitrous oxide, oxygen, and ether as supplementary anaesthesia, and it was noticed that induction was much more rapid than in those who had not had preliminary medication with avertin. Cases in which anaesthesia was unsatisfactory were usually those in which the initial dose of avertin had been small. There was an average fall of 18 per cent. in the systolic blood pressure due to the avertin, thereby showing a definite contraindication to the use of high spinal anaesthesia as a supplementary anaesthetic. Usually, however, the blood pressure returned to normal during the course of the operation. Only about 20 per cent. of cases suffered from nausea and vomiting afterwards, the majority of these being in the gall-bladder group. The authors believe that pulmonary complications were definitely fewer after preliminary medication with morphine, atropine, and avertin than after a morphine-ether sequence. It is interesting to recall that avertin is sometimes administered therapeutically. At least one case has been recorded in which a patient with tetanus was successfully treated with repeated doses to control the spasms. Possibly there is a useful future for avertin in this field.

[1] *Archives of Surgery*, November, 1934.

THE LEAGUE AND THE DRUG TRAFFIC

The Information Section of the League of Nations has recently published a special supplement dealing with activities of the League in the control of traffic in dangerous drugs in accordance with the desire expressed by the Assembly at its fifteenth session "that more general publicity should be given to the great success achieved by the League in this sphere." The document is concerned mainly with the League's efforts to control the commerce in manufactured drugs—namely, morphine, heroin, codeine, dionin, and cocaine. It avoids dealing with the use and abuse of opium itself, with opium smoking, with the coca leaf, and Indian hemp. Credit is given to the Advisory Committee on Traffic in Dangerous Drugs for its fourteen years' labour to improve the international situation in regard to the commerce in narcotics, and great store is set upon the achievements embodied in the Geneva Convention of 1925 and the Limitation Convention of 1931. It is justly observed that "the forging of such a powerful instrument of international government as the international opium conventions, and their successful application on a world-wide scale in the short space of thirteen years, would be inconceivable without the existence of the League." The work of the Hague conferences of 1911–14, and the convention and protocols which they produced, are lightly evaluated, although these inaugurated the attack on the abuse of drugs of addiction and laid the basis for all subsequent developments. The criticism is made that "the Hague Convention provided no machinery for supervising international trade." Clearly prior to the establishment of the League of Nations the machinery for world-wide co-operation did not exist, and indeed the British delegates to the Hague conferences were by their instructions precluded from even discussing "the advisability of an international commission to be entrusted with the carrying out of any international agreement concluded." Nevertheless, thanks to the good offices of the Netherlands Government, even before the war the adhesion of forty-one Powers had been secured to the Hague Convention, while eleven had ratified it and fourteen others were about to do so. The objective pursued by the League is stated to have been "to draw a clear-cut dividing line between the legitimate trade and the illicit traffic in dangerous drugs," to confine production and manufacture of these substances to the amounts required for legitimate needs," and "to combat the illicit traffic by all means at its disposal." To ensure the success that is desired, universality of application of the control prescribed by the conventions, and administrative efficiency on the part of the several national Governments, are regarded as essential. Some forty tons of dangerous drugs are, it is stated, required to meet the world's legitimate needs, and these are manufactured in some sixty licensed factories. As this amount appears to exceed the League's estimates of the annual requirements of morphine (9 tons), heroin (2 tons), and cocaine ($5\frac{1}{2}$ tons), it presumably includes other narcotics not at present under the stringent provisions of the Conventions. The supplement, notwithstanding the achievements recorded, concludes with "a serious warning against undue optimism as to the future," since "there is grave danger that clandestine factories might flood the world with an even greater quantity of illicit drugs than at any time in the past"; and there is also the question of limitation of production of the raw materials of opium and coca which have yet to be dealt with by the Opium Advisory Committee and possibly by another international conference.

ANAESTHETISTS' MEETING IN MELBOURNE

We learn from Dr. Geoffrey Kaye, honorary secretary of the Australian Society of Anaesthetists, that his society intends to meet in Melbourne on September 16th, 17th, and 18th next, immediately after the Annual Meeting in that city of the British Medical Association. By direction of his executive committee Dr. Kaye extends a cordial invitation to the members of the Section of Pharmacology, Therapeutics, and Anaesthesia to attend this meeting while they are in Melbourne. Communications will be welcome from members of the Section; they should inform Dr. Kaye of the titles of their papers, and whether lantern or kodascope facilities are needed, so that a programme may be arranged as early and as completely as possible. British visitors accepting this invitation should write without delay to Mr. E. Lewis Lilley, F.R.C.S. (86, New Walk, Leicester), British honorary secretary of the Section, so that he may transmit the information to Dr. Kaye. Members who intend to return with the official party by way of Singapore leave Melbourne on Sunday, September 15th, and will therefore not be able to take part in the sessions of the Australian Society of Anaesthetists.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been printed; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

The Home Secretary has appointed Sir John Parsons, F.R.S., F.R.C.S., to be a member of the Advisory Committee on the administration of the Cruelty to Animals Act, 1876, in the place of the late Sir William Hardy.

In view of the serious epidemic of malaria, Mr. H. E. Newnham, at present Commissioner of Local Government, Ceylon, has been appointed relief commissioner. The Colonial Office announces that, according to a telegram received from the Governor of Ceylon, the epidemic is showing a distinct decline in most districts.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

DIAGNOSIS AND TREATMENT OF BRONCHIECTASIS

BY

W. ERNEST LLOYD, M.D., F.R.C.P.

The diagnosis of an advanced case of bronchiectasis does not usually present any difficulties, for the long history of cough, accompanied by offensive sputum, especially profuse in the early morning, comprises a group of symptoms which is in itself almost sufficient for diagnosis. Like many other chest conditions, however, bronchiectasis begins as a localized disease process, and it should be our aim to establish its diagnosis when it is still in the earliest stages. This is often a matter of much difficulty, but more early cases will be recognized if the possibility of bronchiectasis is always kept in mind when cough and sputum persist after an acute chest illness.

An accurate history of previous illnesses is most valuable, especially in children and young adults, for in these patients the most important cause of bronchiectasis is an acute inflammatory process, usually a lobar or bronchopneumonia which has failed to resolve completely. Such an area of damaged lung tissue is a potential source of bronchial dilatation, and if, as so often happens, such a patient suffers from another acute chest illness, or even measles or whooping-cough, the previously damaged area of lung is still further affected, and the tendency to fibrosis, and with it bronchiectasis, increases. In these cases it is not uncommon to be told that the patient had pneumonia two or even more times in early childhood, and that cough has been present more or less ever since. Such a history should in itself suggest the possibility of bronchiectasis. In older patients the aetiology is often not clear, but many cases occur in subjects of chronic bronchitis, and sepsis, either of the teeth or of the nasal sinuses, may be a factor. In other cases the condition follows upon obstruction to one of the main divisions of the bronchial tree, either by something occluding the bronchus—for example, a foreign body or carcinoma—or by pressure from without as from an aneurysm.

Symptomatology and Physical Signs

Apart from the usual history of bronchiectasis mentioned above, one symptom calls for special mention—namely, haemoptysis. In the more common type of case, with profuse expectoration, occasional haemoptysis may be noticed from time to time, but in other cases a profuse haemoptysis may take place without the more characteristic features of bronchiectasis being present. Such cases are termed "dry" or "haemorrhagic" bronchiectasis, and the condition has only been recognized since the use of lipiodol in chest radiology. Clinical examination of these patients usually reveals few physical signs, but all cases of haemoptysis should be investigated for the possibility of bronchiectasis as well as tuberculosis.

The physical signs of bronchiectasis depend upon its extent, and in a well-marked case the following signs are usually present. Clubbing of the fingers should always be looked for, and if present is an important point in diagnosis. The affected side of the chest may move badly, and in children falling in of the chest may well be obvious. The position of the cardiac apex beat should be accurately located, as its displacement to the affected side is a sure sign of much structural change in the lung. The signs on auscultation depend upon a number of factors, but the most characteristic ones are those of cavitation—namely, bronchial or cavernous breath sounds, accompanied by numerous rales of a coarse and crackling quality, and by whispering pectoriloquy. The bronchial quality of the breath sounds may only be heard after attempts have been made to empty the bronchiectatic cavities by coughing. Thickened pleura may mask the above signs, and weak breath sounds with a few inconstant rales may be all that can be elicited.

When physical signs in the chest are present at one or other base of the lung, and such signs suggest cavitation, the most likely diagnosis is bronchiectasis, but occasionally bronchiectasis may be present in the upper lobe. Tuberculosis, on the other hand, in its early stages is usually an apical condition, but, less commonly and by no means rarely, it begins as a basal lesion. In all cases, therefore, the sputum must be examined and repeated search for tubercle bacilli made to exclude the possibility of tuberculosis.

In every case of suspected bronchiectasis radiology of the chest after lipiodol injection into the bronchial tree should form part of the routine investigation. Many methods are available for the injection of lipiodol, and the method employed is a matter of personal choice. A good radiogram may demonstrate that bronchial dilatation is present when physical examination is inconclusive, and even when physical signs are characteristic it indicates more accurately the extent of the disease. Many cases clinically unilateral prove, unfortunately, to be bilateral after lipiodol investigation, and this is important when treatment is considered. The diagnosis of haemorrhagic bronchiectasis, as has already been mentioned, often depends upon the result of lipiodol radiography.

Prevention

The preventive treatment of such a serious condition as bronchiectasis has not received the attention which it deserves. In a large number of patients a history of one or more attacks of pneumonia in childhood is obtained, and this applies also to cases of haemorrhagic bronchiectasis. Pneumonia is a serious disease, not only because of its immediate dangers, but also because of its possible after-effects. Physical signs remain long after the temperature and pulse rates have settled, but the presence of such signs indicates that the lung affected is still abnormal, and the greatest care of such a case must be taken. It is possible that convalescent treatment after pneumonia in early life is not sufficiently prolonged, and it should be a rule that no child is fit to resume its ordinary life after an attack of pneumonia until all signs in the chest have disappeared. A long stay by the sea undoubtedly benefits this type of case, and breathing exercises to help diaphragmatic movement should be freely employed.

Aim of Treatment

The treatment of a well-marked case of bronchiectasis with copious morning expectoration calls for much patience and perseverance on the part of both the patient and his doctor, and unfortunately the results of treatment have

not been very satisfactory. The objects of medical treatment are as follows: (*a*) effective expectoration; (*b*) prevention of fetor of sputum; and (*c*) improvement in the general condition of the patient.

Details of Treatment

EXPECTORANTS

One of the most important factors in the aetiology of bronchiectasis is further damage to the bronchial wall by the retention of secretion, and everything possible should be done to help the patient to get rid of the accumulated sputum. The most valuable expectorants are ammon. carb., ammon. chlor., pot. iod., inf. seneg., and these should be given in liberal doses. The following prescription will be found useful:

℞	Ammon. chlor.	gr. xv
	Pot. iod.	gr. v
	Ext. glyc. liq.	♏ xx
	Inf. seneg.	ʒ ss
	Aq.	ad ʒ j

t.d.s., p.c.

There is no place for sedative drugs in the treatment of bronchiectasis, and measures to stop cough must be avoided. Furthermore, it is of little value taking a few bottles of medicine for this condition, for a patient with bronchiectasis will always need help from expectorants. Expectoration may further be helped by the inhalation of steam medicated with tr. benzoin. co., or ol. eucalypti or pin. sylvest. A teaspoonful of one of these inhalants is added to a pint of boiling water in a basin, and, with a towel over the head and shoulders, the patient is instructed to inhale the steam for five minutes.

POSTURE

Another aid to effective expectoration is by the so-called "tipping" method, the object of which is to empty bronchiectatic cavities by postural drainage. During sleep the basal cavities become filled with secretion, and hence the best time to advise tipping is in the early morning. A hot alkaline draught containing sod. bicarb. grains x and sod. chlor. grains v, if taken on rising, facilitates the procedure. The patient is instructed, whilst lying on the bed, to lower the head over its side until the ground is almost touched, the body being supported by the hand placed on the floor. Much sputum may flow out when this posture is assumed. Undoubtedly a great deal of benefit may be obtained if a patient perseveres with this treatment, and it may with advantage be carried out not only on rising, but also before retiring.

RESPIRATORY DISINFECTION

Prevention of fetor of the sputum is an important part of the treatment of bronchiectasis, as many patients are very conscious of their disability, and become depressed and avoid company. Fetor is due to secondary infection of the sputum, and only occurs when the sputum stagnates in the bronchiectatic cavities. In the early stages of the disease there is no fetor, but in the advanced case it is almost invariably present, and it is very difficult to treat effectively. Of all the drugs used as respiratory disinfectants perhaps the best is creosote given in capsules containing ol. creosot. ♏ iii twice a day.

The inhalations mentioned above are of but small value in rendering the sputum inoffensive, but inhalations of creosote burned in a creosote chamber are of value. This is rarely possible in a patient's own home, as a room must be set aside for this purpose alone. If a patient has access to this method of treatment goggles should be worn to protect the eyes, and a little cotton-wool should be inserted inside each nostril. At first tolerance to the creosote vapour may not exceed ten minutes, but later much longer exposure may be tolerated. In very advanced cases the patient may be pleased to wear more or less continuously a Burney Yeo oro-nasal inhaler in an effort to render the breath and sputum less offensive.

The sponge of the inhaler is saturated with the following solution:

℞	Ol. pin. sylvest.	ʒ j
	Ol. eucal.	ʒ j
	Sp. chlorof.	ʒ ij
	Creosot.	ad ʒ j

THE GENERAL CONDITION

This is most important. All septic foci in the mouth and sinuses must be eradicated. Many patients suffer from poor appetite, and measures to maintain the general well-being and weight of the patient must be tried. These include change of climate and cod-liver oil. If there is much bronchitis an autogenous vaccine given in small doses is of some value. Patients with bronchiectasis are liable to catarrhal infection of the upper respiratory tract, and they should be instructed to treat every "cold" with caution and remain indoors.

Radical Measures

The above treatment will undoubtedly check the spread of bronchiectasis in many cases, and patients who carry out these measures may be able to continue at work, but unfortunately the disease may progress in spite of this treatment, as indicated by an increase of sputum. In these patients further measures aimed at obliterating the bronchiectatic cavities must be considered. These include artificial pneumothorax, phrenic evulsion, and thoracoplasty.

Artificial pneumothorax often fails because of adhesions in the pleural space, and even if a good collapse of the lung is obtained lipiodol investigation may still reveal dilated bronchi. The treatment has, however, proved successful in a small percentage of cases. The results of phrenic evulsion and thoracoplasty have proved so disappointing that such operations are not recommended. Drainage of bronchiectatic cavities by aspiration methods through the bronchoscope may be carried out, but the results are rarely of permanent value. The ideal treatment for any septic area in the body is either to drain it adequately or, if possible, to remove it. Surgical drainage of bronchiectatic cavities has been attempted and proved unsuccessful.

Removal of the affected lobe of the lung, or lobectomy, is the radical treatment for bronchiectasis, and it should be considered in those cases of unilateral bronchiectasis which are progressive in spite of the medical measures indicated above. Although the mortality figures of this operation have fallen very considerably in the last five years, lobectomy is still a serious operation, and should not be carried out except by those experienced in the surgery of the chest. To ensure good results skilled after-care is also very necessary. Mr. Tudor Edwards and Mr. Price Thomas, in a recent paper (*British Journal of Surgery*, 1934, vol. xxii, No. 86), quote their results of one-stage lobectomy in fifty-seven patients with bronchiectasis. Of these cases eight died, giving a mortality, early and late, of 14 per cent., and in the remainder the results of the operation were very satisfactory.

In the late stages of bronchiectasis the wasted, toxic condition of the patient renders any operation a serious matter, and hence lobectomy, which undoubtedly offers the best treatment for unilateral cases, should not be postponed indefinitely, but should be considered when medical measures have been given a fair trial, and when lipiodol radiography excludes the presence of bronchiectasis in the other lung.

In cases of bronchiectasis following obstruction within one of the main bronchi, bronchoscopic examination should be carried out to discover the nature of the obstruction demonstrated by lipiodol radiography. The treatment of these cases is directed towards the primary condition, and cases of foreign body in the bronchus or innocent tumour (a very rare condition) may be removed successfully, but if the obstruction has been present for a long time some degree of bronchiectasis remains, even after the obstruction has been removed.

HUMAN ODDITIES AND FREAKS

The Kensington Division, which has a name for enterprise in the British Medical Association, has never staged a more popular clinical meeting than the one which took place at the Princess Beatrice Hospital on January 18th, when a demonstration was given of the strange people from the circus at the neighbouring Olympia. Medical men and women from all parts of London availed themselves of the invitation to attend, and the hall was packed to capacity. The demonstration was by arrangement with the staff of the hospital and by the kind permission of Mr. Bertram Mills. The ladies and gentlemen from the circus in turn interrupted their performance there to make their bow to the medical gathering, and exhibited their accomplishments or peculiarities with great satisfaction to themselves.

The Giraffe Women

The first to appear were two "giraffe-necked women" from Penang, members of the race known as the Palungs. The necks of these people had been distorted from infancy by having placed around them a succession of brass rings, one for each year of life, so that they now appeared with elongated necks encased in a spiral of twenty or more thick rings. This neck armour cannot be detached, and if it could the neck would probably be in a very precarious condition. It was desired to make an *x*-ray photograph of the presumably distorted cervical vertebrae, but the metal rings made this impossible. Only about three hundred people in the Malay Peninsula now follow this custom, which has no religious or ceremonial significance, but is thought possibly to have originated as a protection to the neck against the spring of tigers.

Pituitary Infantilism

A midget, announced as the world's smallest woman, next appeared. She was twenty-eight inches in height and 24 years of age, one of a family of three girls born in Saxony, and evidently a very intelligent as well as attractive lady. Dr. Stanley Wyard took occasion to offer a few remarks on this type of deformity. There had been many attempts, he said, to distinguish between dwarfism and infantilism. The former was said to be a condition in which normal development of the parts in all respects except size was acquired, while infantilism meant the persistence of child characters into adult years. Both definitions seemed to him too narrow. A person might be infantile mentally while the body was of normal size, or the genital organs might remain undeveloped while other bodily and mental functions were normal. He distinguished four causes for lack of development: (1) endocrine derangement, almost always a deficiency, except perhaps in the case of persistent thymus; (2) defect of glands of external secretion, such as pancreas or kidneys; (3) chronic disease in early childhood, such as rickets; and (4) some congenital and hereditary factor, such as was responsible for the achondroplastic dwarf. In most cases a careful examination of the condition would reveal more than one factor to be operative. The midget exhibited probably derived her deficiency from a defect of both anterior and posterior lobes of the pituitary; such people were miniature adults, in some cases—though evidently not in this one—exhibiting mental defect. Two cases were also shown from the hospital wards by Dr. Buckley Sharp: one a type of coeliac infantilism in a child aged 2, and weighing 17 lb.; the other a type of renal dwarfism in a child of 10 with the size and weight of a child of 5.

The Leopard Woman

The next exhibit from Olympia was of two "leopard skin women"—sisters born in Madagascar, with a curious spotted pigmentation of the skin, white and chocolate-brown. One of the striking features in both was a triangular white patch starting in the middle of the forehead and spreading out over the scalp. It was stated that the same defect had occurred in previous generations of the family. Dr. J. L. Franklin said that when he first saw these women he thought they were examples of common leucodermia, but he discovered on questioning them that the white patches had always been constant; it was evidently a congenital pigmentary defect. Dr. St. G. Gray mentioned that while in Brazil he found cases of this kind not at all uncommon in the Amazon Valley. There was a curious belief among the native people that when a child had this spotted appearance the mother had been bathing in the river and its father was a manatee. Mr. Bishop Harman said that some years ago he had published, under the title of "Six Generations of Piebalds" (*Trans. Oph. Soc.*, 1909), a pedigree of an English family with these typical white spots; although, of course, in a white race the appearance was less striking.

The Mechanical Man

The remaining exhibits were of less medical than of popular interest. One of them was an Englishman whose entire skin, including his closely shaved scalp, was tattooed in a weird pattern. The tattooing occupied three years at the rate of three hours a day. An anaesthetic was used only for the parts in close proximity to the eyes. The "mechanical man" next made his appearance, his introducer from the circus stating that even yet, after considerable acquaintance, he was in doubt whether he was a human being or a machine. He appeared wearing a kind of armour, with a mask-like face, and on being propelled from behind made certain mechanical movements of the limbs. Attention was drawn to his fixed glassy stare, but one member of the company tested him with the electric torch, and thought that he saw the pupils react. Beyond that, as it was not permitted to touch him, his mystery remains unelucidated.

Goldfish and Watches

Finally, the "human ostrich" exhibited his gift, said to have been discovered at the age of 11, for swallowing large and inedible objects, subsequently ejecting them. He swallowed a watch, exhibited his empty mouth for verification, and then, after a few premonitory writhings, returned the article; a large stone was treated in the same way. He also swallowed a live goldfish, and after a time ejected this also, reversing the roles of the Jonah story. He submitted himself to an *x*-ray examination, the precaution being taken to place a small shot in the fish, and it was shown that the fish had undoubtedly passed into the stomach. The mechanism appeared to be that the swallower placed the goldfish in his mouth, held it for a few seconds at the back of the tongue, then swallowed a quantity of water, being careful to swallow at the same time a large quantity of air, and afterwards, the fish having been dropped into the stomach, there was a forcing up of the air, the fish being forced up in front of it. The swallowing of the watch depended on a rather different mechanism, but it would be unfair to give away such curious professional secrets.

Dr. Henry Robinson, chairman of the Division, expressed the thanks of the company to Mr. Bertram Mills for a very interesting evening, and in reply a member of the circus management said, in answer to possible criticisms generally made on the exhibition of a *lusus naturae*, that all these people would sincerely declare themselves happy. If left in their own native villages they would probably be ostracized and an encumbrance to the community, whereas in the circus they were not only earning their livelihood, but supporting those dependent on them.

FOG GLASSES FOR CARS

We have received for examination a specimen of a glass called "nebulite," which, in the slogan of the advertisement sheet, is the "glass that conquers fog." It is claimed that this is "a specially treated glass which definitely projects light through fog and mist without back-glare. It must not be confused in any way with amber disks or such-like fog equipment now on the market. It ends once and for all the terror, the slow speeds, and the strain of driving in fog and mist." These are bold claims, and if they are justified when put to the proof, such a glass would justly be held to rank in value with the non-splinterable glasses that add so much to the safety of motor vehicles.

LABORATORY AND OUTDOOR TESTS

The specimen of the glass received was a seven-inch disk, the size of a well-known make of head-lamp of a popular car. The glass is a thick heavy glass of a strong amber tint, wavy on one surface and plain on the other. It was five millimetres thick, and the disk weighed nine ounces. It was subjected to both laboratory and outdoor tests. In the latter tests three experienced motor drivers took part: one was an ophthalmic surgeon, another a physician, and the third a member of a firm concerned with illumination.

Tested with the spectroscope the glass was found to cut out rather more than half the visible spectrum; all that part extending from Fraunhofer's line E in the green through the blue and violet was absorbed by the glass and rendered invisible. This limitation of the spectrum had its effect upon the appearance of the illumination on the road—blues became dark slate colour, and the grass verges were less vivid. Reduction of the spectrum also means that for an electric lamp projecting a beam of given power less light will be given when the lamp is fitted with this special glass than when it is fitted with clear, untinted plate glass. This was demonstrated by the use of the delicate selenium photometer (which had been tested at a lighting station). At a distance of thirty feet the head-lamp, fitted with untinted glass, projected a light of fifteen foot-candles—that is, of fifteen standard candles held one foot from the test spot. The same lamp fitted with the special glass gave a reduced illumination of nine foot-candles. That the light is reduced is recognized by the vendors, for in the circular of instruction it is said: "Should you consider the nebulite does not give you adequate illumination on a clear night, the beam may be tested on a reflecting sign or a bicycle reflector. It will be found that the reflector lights up at a distance at least equal to that at which illumination takes place with a white light." That is a two-edged claim for such a glass, for if reflectors throw back the tinted light equally with the white light, then the claim that back-glare in fog is eliminated cannot be justified, for back-glare in fog is no more and no less than the reflection of the light from the innumerable particles of moisture which make the mist.

Tests for visibility were made by reading printed matter. One-inch black letters on a white ground were exposed in the two lights and the greatest distances at which the letters could be read measured. The tests showed that legibility with the tinted glass was reduced by some 25 per cent., and it was clear that this was due to the loss of contrast following the reduction of the illumination.

The effect of the glass in fog can only be estimated subjectively by the impression and sense of comfort or discomfort experienced. So far as could be judged the reaction to this glass did not differ from that produced by a reduction of the power of the light.

So much for the trial of this particular glass. The whole question of coloured head-light beams in fog has been the subject of a recent note by the National Physical Laboratory, under date November 8th, 1934. We give the note in full, for its findings are of special interest to doctors, who are out in all weathers.

COLOURED HEAD-LIGHT BEAMS IN FOG

Does a coloured head-light beam enable the driver of a car to see farther in a fog than when using a white head-light? Three years ago the International Commission on Illumination passed a provisional resolution stating that there was no advantage to be gained by using coloured head-light beams in fog. Subsequently that resolution was withdrawn, partly because the evidence in favour of the statement was indirect and of too vague a character. In view of the interest and importance of the subject, the National Physical Laboratory at Teddington carried out a methodical series of tests during the heavy fogs of last winter to discover whether a satisfactory answer could be found to this vexed question. The results of the experiments have recently become available.

The distance at which an observer could just detect a test object through the fog was determined, both with the unscreened head-lights and employing glass filters of various colours—orange, red, and blue-green. Of course, altering the colour of a head-light beam by placing a coloured glass plate over the head-light also diminishes the intensity of the light. The results of the experiments point to the conclusion that the only effect on range of visibility in fog due to inserting the coloured glasses arises from this diminution of intensity, which is accompanied by a reduction in the penetration of the beam through the fog. The distance at which the test object could be discerned was the same with coloured glasses as with clear, colourless glasses, provided the intensity of the light, after passing through the glasses, was the same in each case.

Scotland

£100,000 for Edinburgh University

The Court of Session in Edinburgh on January 15th gave approval to a scheme for the administration of a bequest of £103,771 left to the University of Edinburgh by Mrs. Annie Mina Cameron, widow of Lieutenant-Colonel Lewis Cameron of the Indian Medical Service, who died at St. Helier, Jersey, in October, 1930. Mrs. Cameron had bequeathed all her estate to the University as a Lewis Cameron fund to provide a yearly prize for the best essay on bacteriology or on the diagnosis of disease by students of the University. As the income of the fund would have yielded an annual revenue much too large for reasonable disposal in this way, the executors instituted proceedings before the High Court in England and the Court of Session in Scotland to modify the terms of the trust disposition, and the scheme as now approved allocates the bequest as follows. A sum of £3,000 is to be set aside for two yearly prizes of £50 each, to be known as the Lewis Cameron Prizes, one for competition by undergraduates and the other by graduates of the University for the best papers on subjects related to bacteriology or the diagnosis of disease. A Lewis Cameron teaching fellowship in bacteriology of the approximate annual value of £510, the holder of which is to have the status of a lecturer, and to devote part of his time to research, is to be secured from a capital sum of £15,000. A further £15,000 is to be allocated for the endowment of existing lectureships in the department of bacteriology. Two sums of £10,000 each are to be set aside, the first to provide annual revenue for expenses of research work in bacteriology, and the second revenue for purchasing books and periodicals on bacteriology and diagnosis for the medical library of Edinburgh University. The remainder of the bequest, with the income therefrom, is to be used as the nucleus of a fund for providing additional accommodation and equipment in the University of Edinburgh for the teaching of various sciences bearing on the diagnosis of disease, this to be known as the Lewis Cameron Medical

Buildings Extension Fund. This building scheme is part of a proposed extension of the University buildings and medical equipment estimated to cost £300,000, and it is proposed to proceed with it when a sum of £90,000 has been accumulated.

Health of Glasgow

The report for 1934 of the medical officer of health for Glasgow, Dr. A. S. M. Macgregor, states that the general death rate was the second lowest recorded, the number of deaths being 15,230, or 13.7 per 1,000 live persons, as compared with 14,747, or 13.4 per 1,000 for 1933. The year 1934 was remarkable for the prevalence of measles, with about 20,000 cases and over 500 deaths. The death rates for pneumonia and diphtheria were higher in 1934 than in the preceding year, but lower rates prevailed for other epidemic diseases. After remaining stationary for a few years, the tuberculosis death rate resumed its tendency to fall about three years ago, and the year 1934 marked another decline in all forms of this disease. The pulmonary tuberculosis rate fell from 889 per million of the population in 1932 to 824 in 1933 and 781 in 1934, the lowest figure yet recorded. The rates for the non-pulmonary forms in the same three years were 269, 246, and 217 respectively, the latter figure being also the lowest yet recorded. As showing the extent of the reduction, the report states these rates may be contrasted with the average annual rate of 949 for the quinquennium 1906 to 1910.

Stirling Royal Infirmary

At the annual meeting of Stirling Royal Infirmary held on January 16th, the report, which was submitted by Colonel J. C. Dundas, who presided, showed that the number of patients treated in hospital during the year was 2,513, or ninety-seven more than in the previous year. The average number of patients per day was 133, with an average period of residence of 19.3 days and an average cost per patient per day of 7s. 3d. The chief event of the year was the completion of the extension with accommodation for numerous clinics and a second operating theatre at a total cost of £7,827. The income during the year was £17,541 and the expenditure £17,697; the capital account of the infirmary and its convalescent home now amounts to £108,824. In an address on the future of the medical service in Scotland, Dr. R. W. Craig, Scottish Medical Secretary of the British Medical Association, referred to the increasing popularity of the voluntary hospitals as illustrated by the Stirling Hospital, where in 1906 the number of patients admitted was 555, while in the past year it had been 2,513. This did not mean, he said, that there was more disease in the community than there was thirty years ago, for the death rate during the past sixty years had been reduced from 21 to 12 per 1,000 of the population. The rise in the number of patients meant that the resources of medical science had so greatly increased that many more diseases could be successfully treated now than formerly. There was still room for improvement, however, and changes were necessary in health policy. During the past half-century environmental factors had changed so much that some diseases such as typhoid fever and small-pox had virtually disappeared. Better housing had improved health and had had a marked effect on the moral, social, and aesthetic standpoint of the population. In the past the work of the doctor had been chiefly concerned with the relief of established disease, but it was now becoming more recognized that his primary function was the preservation of health. To enable the medical profession to undertake this duty important changes would have to be made in the method by which medical attendance was provided for the vast majority of the population. About eighteen months ago a Departmental Committee was set up by the Secretary of State for Scotland to consider the health services of the country, and it was expected that this committee would finish its investigation and make its report some time in the autumn. The most effective use of the hospital services could be secured if they were organized on a regional basis. Scotland should be divided into five areas based upon the four university towns with Inverness for the northern region. The hospitals in each region should be linked up in the closest co-operation with each other, and it would be well if the entire medical services were also organized on this regional basis. Such a scheme of rationalization would require a good deal of open-mindedness on the part of the authorities concerned, but it would lead to great improvement in the efficiency of medical services generally.

England and Wales

Newcastle-on-Tyne: Farewell Dinner to Professor Grey Turner

Professor G. Grey Turner, surgeon to the Royal Victoria Infirmary, Newcastle-on-Tyne, was entertained to a complimentary dinner in the Grand Assembly Rooms at Newcastle on January 17th in connexion with his approaching departure to take up the appointment of professor of surgery at the British Post-Graduate Medical School, London. The dinner arrangements were made by a committee representing the North of England Branch of the British Medical Association, the staffs of the Royal Victoria Infirmary, and the University of Durham College of Medicine, the Newcastle and Northern Counties Medical Society, the Northern Counties Branch of the British Dental Association, the North of England Odontological Society, and the staff of the Newcastle Dental Hospital. The company numbered over 200. Mr. F. C. Pybus, surgeon to the Royal Victoria Infirmary, proposed the congratulatory toast, recalling the services rendered by Professor Grey Turner since his graduation at the University of Durham in 1898. In reply, Professor Grey Turner expressed his regret at leaving the scene of his activities for so long, but said that he fully recognized the honour that had been accorded him by his new appointment. The toast of "The Medical and Dental Professions" was proposed by the Bishop of Newcastle and acknowledged by Sir Robert Bolam. The Lord Mayor, replying to the toast of "The Guests," paid a warm tribute to the work of Professor Grey Turner and the benefits he had conferred on the city and district by his assiduous services. Professor Turner is an honorary Fellow of the American College of Surgeons, and was its Murphy Orator in 1930. He is a member of the Post-Graduate Assembly of the United States of America. In 1928 he was president of the Association of Surgeons of Great Britain, and in the following year was Orator of the Medical Society of London. He has been a member of the council of the Royal College of Surgeons of England since 1926.

Housing and Health Insurance

Sir Hilton Young, the Minister of Health, received a deputation on January 17th from the Trades Union Congress General Council, whose object was to submit to him the resolutions on housing and on health and pensions insurance passed at the Weymouth congress last year. Mr. George Hicks, M.P., spoke in support of a resolution which, while appreciating the efforts now being

made by the Government and local authorities to deal with the housing problem, called for a stronger and bolder policy, and for the setting up of machinery to co-ordinate all the factors in the building industry essential to the provision of houses and to stimulate local authorities. Mr. Hicks said that the housing effort of this country had not been surpassed by any other country in the world, and the slum clearance work of the Minister and local authorities was fully appreciated. But further efforts were required if the housing problem was to be solved. The Trades Union Congress had not as yet been able to consider the new Housing Bill, published that day, but they would support the Minister in any bold policy for the destruction of the slums and the prevention of overcrowding. Mr. Golding and Mr. Temple said that the present income limit of £250 for insurance under the Unemployment and Health and Pensions Insurance Acts frequently caused hardship to non-manual workers. They urged that the income limit should be increased to £500 per annum. The Minister, in the course of his reply, welcomed the deputation's assurances that they would support a bold housing policy. In the new Housing Bill the Government proposed a direct attack upon the evil of overcrowding similar to the direct attack that was already being made upon the slums. He appreciated the importance of ensuring that houses built for sale were soundly built of good materials, but he did not think that legislation was needed for this purpose, or that there was a case for requiring a guarantee. Municipal authorities had already powers under their by-laws to enforce satisfactory standards. The proposal to increase the income limit for the insurance of non-manual workers was one with which the Government sympathized, but it was necessary to balance the advantages to be gained with the financial possibilities under the national insurance schemes.

Sir Josiah Court

Sir Josiah Court, J.P., of Staveley, the senior member of the British Medical Association in Derbyshire, attained his ninety-fourth birthday on Thursday, January 17th; he still lives in his old home, and enjoys good health. He received a very heavy mail and a number of telegrams during the day, including one from the Duke and Duchess of Portland, and many friends called to offer their good wishes; in the evening a birthday peal was rung on the bells of the parish church. At a meeting of the Chesterfield Division of the B.M.A. on January 18th Dr. H. W. Pooler, senior honorary secretary, was instructed to convey the heartiest congratulations of the Division to its oldest member. Sir Josiah Court will be remembered by many besides his friends and neighbours as the general practitioner in a colliery area who, in the face of strenuous and not always agreeable opposition, established the position of miners' nystagmus as due mainly to the lighting of the mines, and not to the posture of the men while at work.

Individual Psychologists at Dinner

The annual dinner of the Medical Society of Individual Psychology was held at the Florence Restaurant, London, on January 10th. Dr. J. C. Young presided, and the guests of honour were Professor Millais Culpin and Dr. H. G. Baynes. Dr. George Gordon, in proposing the toast of "The Guests," referred to the open platform of the society and said that neither of the guests need feel that they were strangers, because the society honoured them for their work in psychology however much their views differed from the tenets of individual psychology. Professor Culpin congratulated the society in its efforts to encourage the psychological approach to medical practice and gave several illustrations of the mistakes made and the suffering entailed as the result of the practitioner's failure to appreciate the psychic factor operative in disease. If a medical man asked him how he should learn how to deal with this factor he had no hesitation in advising him to join the society. Dr. Baynes said that the more people asked "Why is this person ill?" the more they were in the realm of research. Different standpoints were not really so very important so long as the study went on; hence he fully appreciated the value of the eclectic attitude held by the society. Dr. Mary Ferguson, in proposing the health of the chairman, referred to Dr. Young's valuable services, not only as chairman, but as editor of the society's pamphlets.

Tribute to a Court Medical Referee

On January 14th, in the Mayor's and City of London Court, his Honour, Judge F. Shewell Cooper, bade farewell to Dr. W. Murray Leslie on his retirement, after thirty-seven years' service, as court medical referee. Dr. Murray Leslie was appointed to that post by the Home Office on July 8th, 1898, under the first Workmen's Compensation Act of 1897. In the course of his tribute Judge Shewell Cooper said: "Through all the time that Dr. Murray Leslie has been here he has been of the very greatest value to the court. I myself have been here for twelve years, and to me he has been simply invaluable; his professional skill and experience has helped me in many difficult cases. I discovered, long since, that he had a further quality of value besides his professional skill and experience, and that was the capacity of reading character, which has been a very useful thing—assisting him to diagnose a certain class of case which is familiar to everyone who comes here." Mr. G. C. Kingsbury, speaking on behalf of members of the Bar present in court, added a few words expressing admiration of Dr. Murray Leslie's skill, ability, fairness, and humanity, and his capabilities in diagnosing character. "I have known him here professionally as medical referee for thirty years," he said. "There may have been occasions when he and I have disagreed, but his services as a whole have been of eminent assistance to the members of the Bar, to solicitors here, to your lordship, and to litigants on both sides." Dr. Murray Leslie said that he keenly felt the patience, consideration, and courtesy that had always been shown him by the occupant of the chair in that court and by the members of the Bar.

Alfred Eichholz Clinic

The National Institute for the Blind announces that the following medical men and women, under the chairmanship of Lord Moynihan, have been appointed members of the Medical Advisory Board of the Alfred Eichholz Clinic, 204, Great Portland Street, London, W.: Sir Maurice Cassidy, Sir Humphry Rolleston, Sir Russell Wilkinson, Sir William Willcox, Dr. F. M. Allchin, Mr. A. B. Bankart, Mr. L. E. Barrington-Ward, Dr. J. B. Blaikie, Dr. Anna Broman, Mr. J. D. Buxton, Mr. Lionel Colledge, Dr. E. P. Cumberbatch, Mr. H. A. T. Fairbank, Mr. R. C. Elmslie, Dr. Anthony Feiling, Dr. Wilfred Harris, Dr. J. P. Hedley, Mr. G. Seccombe Hett, Dr. M. Gordon Holmes, Dr. F. D. Howitt, Dr. A. F. Hurst, Dr. Muriel Landau, Dr. F. E. Larkins, Dr. W. J. O'Donovan, Mr. Herbert J. Paterson, Dr. Eric Pritchard, Dr. G. Riddoch, Dr. John Sainsbury, Dr. T. Grainger Stewart, Mr. P. Jenner Verrall, Dr. Dorothy Wood, and Dr. C. C. Worster-Drought. The Alfred Eichholz Clinic, which is administered by the National Institute for the Blind, was officially opened last year by H.R.H. the Prince of Wales. It is equipped for a wide range of treatments by massage, electrotherapy, and balneotherapy. The clinic serves a class of patient able to pay ordinary fees. Treatments are given, under medical supervision, by blind chartered masseurs and masseuses.

Reports of Societies

ASSESSMENT OF MENTAL DEFICIENCY

A combined meeting of the Sections of Neurology and Psychiatry of the Royal Society of Medicine was held on January 17th, when a special discussion took place on mental defect from the standpoint of both Sections. Dr. S. A. KINNIER WILSON was in the chair.

A PHYSIOLOGICAL APPROACH TO DIAGNOSIS

Professor R. J. A. BERRY suggested a physiological approach to the diagnosis of mental deficiency, and described a physiological system of marking for younger children, and for older and higher grades of defectives a more complex method on the same basis—namely, the "psychogram," employing measurements, tests, and observations of which the norms and percentiles for normal children from 6 years onwards were known. Every child at first was a speechless and helpless automaton. After some twelve months motor control was established over bladder and rectum ; at about the fifteenth month, with the necessary developments of the pyramidal tract, the erect posture was assumed ; speech should normally begin from the eighteenth to the twenty-fourth month, and within three or four years the foundation of education in reading, writing, and arithmetic should be laid. Observations made upon the growing child to-day were very largely those of non-medically but educationally trained psychologists, who sought to apply to the infant and child the more or less complex tests of which the Binet and Merrill-Palmer were examples. None of these were very well suited to the clinical activities of the busy practitioner. It occurred to him that physiology itself might possibly provide one of the simplest methods for the early assessment of oligophrenia, making the practitioner independent of the complicated psychological tests which he had not usually the time, patience, or technical skill to apply. Professor Berry described how certain marks were allotted for each of the four physiological characteristics just mentioned—the acquirement of cleanly habits, walking, speech, and educability—the maximums adding up to 100, and he gave the results of a trial of this method on a group of thirty-three certified defectives, thus arriving at an assessment of their mental ages. If a child of 4 or 5 years of age had not established any of these essential human characteristics it was strongly suggestive of a nervous system which was not developing properly, and some degree of mental deficiency would almost certainly follow. For older and higher grades of defectives the physiological approach to diagnosis demanded more complex methods, but the basis was the same—namely, a comparison between the defective and the normal child. For this purpose the psychogram was offered. The measurements of which it made use comprised head length, head breadth, head height, brain capacity, standing stature, sitting stature, weight, physical average, Binet tests, Porteus tests, and combined Binet-Porteus and Merrill-Palmer tests. Used not as a substitute for clinical methods but as a preliminary thereto the psychogram was a distinct aid in the assessment of oligophrenia. As oligophrenia, whatever its cause, resulted from a maldeveloped brain and nervous system, it should be the objective of all tests and measurements to discover the degree of retardation displayed by that brain. It had been proved, for example, that at least two-thirds of mental defectives were definitely small-headed ; this was one clinical indication of an undeveloped brain. Opportunity had arisen for an examination of the brains of thirty-one defectives whose head measurements had been recorded during life, and the brains were found to be 20 per cent. smaller than normal. He was convinced that small-headedness was of considerable diagnostic and neurological significance, because when combined with other approaches it afforded some suggestive evidence of the state of development. The psychogram was a graphic representation of certain of the patient's characteristics, physical and mental. It enabled him to be compared at a glance with a normal individual of his own age and social standing. An examination of the psychogram of almost any defective patient would at once indicate how far below normal standards, physical and mental, he fell, and thus an accurate indication of the degree of retardation was afforded. As one of the pioneers in the introduction of the psychogram—which he illustrated by a description of some clinical cases—he urged meticulous care in its compilation and interpretation.

BRAIN MORPHOLOGY IN RELATION TO INTELLIGENCE

Dr. R. MACKENZIE STEWART began by asking whether size, weight, volume, and convolutional and cellular richness of the human brain afforded an accurate gauge of mental development. It was true that if the constitution of the brain of an animal were studied most of the activities which the animal displayed could be predicted within certain limits, but man possessed a plasticity of behaviour infinitely more complex even than the higher mammals. As for brain size, mental defectives were nearly always undersized in their entire somatic development, and deficiency manifested itself just as much in the body as in the brain. Consequently small brain volume might be nothing more than a local expression of a more or less uniform smallness affecting all parts. There was a tremendous load of physical defect among the feeble-minded. That brain size was closely related to body size had been, of course, well recognized for many years. So far as normal persons were concerned, on the whole, the tall had heavier brains than the short, but this need not establish any prejudice in favour of very tall and large-headed persons. Men with massive heads did not necessarily represent the intelligentsia. Anatole France seemed to be in danger of being remembered rather for the extraordinary smallness of his brain than for the brilliance of his writings. There were now in literature five well-documented cases of micrencephaly in which the mental ability as measured by accepted standards was in no way subnormal. The size of the brain could not furnish a dependable index for intellectual activities. As for fissuration and convolutional complexity, he referred to some experimental work by Addison and Donaldson, in the United States, on normal brains, and to Ashby's investigation of the convolutional measurements in a series of brains of mentally defective persons, and concluded that there was no evidence for the assumption that convolutional pattern was necessarily an index of superior mental development. In Ashby's work the most complex convolutional pattern belonged to the brain of an idiot whose mental rating was zero. The assumption that aments had broad and simple convolutions must be rejected. Nor were there any reliable data to point to the significance of thickness of the cerebral cortex. He mentioned Shaw Bolton's work on the supragranular and infragranular cortex, which he criticized in certain aspects, also the work of Berry and Norman on four aments' brains and a larger series investigated at Leavesden. Altogether the correlation between brain weight and mental age, or between thickness of cerebral cortex and mental age, was insignificant. Most of the variations in the brain and cortex measurements seemed to be due to variations in body size rather than to differences in mental age. Some recent work of interest had been done at Stoke Park Colony on the cellular richness of the cortex, but no marked difference was found in the cell counts as between the idiot, the imbecile, and the feeble-minded ; and again, there appeared to be no significant correlation between the number of nerve cells in the supragranular cortex and the degree of amentia. Altogether, his conclusions were negative, but he added that one might perhaps infer that normal intelligence demanded an even balance between all parts and all constituents of nerve tissue, including those which were not usually regarded as having mental function.

GENERAL DISCUSSION

Dr. C. J. C. EARL discussed the behaviour of the defective and certain non-intellectual factors which influenced behaviour. Intelligence, he said, was not a phenomenon, it was an abstraction, and, moreover, an abstraction which had never been satisfactorily defined. Behaviour, on the other hand, was an objective phenomenon. Even at the

lowest level no account of cerebral structure alone could possibly account for behaviour ; one had to deal with the whole individual and with his environment and experience. There was no clear clinical picture of the highest grade of defect, nor really any definition of it. The essential defect was an inability to adapt to society, and social adaptation was very largely a question of emotional factors. It was on the emotional side that the defective showed a distinct lack ; he was emotionally juvenile or immature. In any individual case such emotional immaturity might be inherent or acquired ; in the vast majority of cases both factors operated, though in varying degrees. The other environmental factor was that of social and economic circumstances, and the speaker affirmed that, apart from cases of gross inherent instability, it was the factor of sheer " social ill-luck " which was dominant in most defectives whose mental age was about 9 years.

Dr. NOEL BURKE asked what was mental deficiency from the neurological point of view. There had been a stream of valuable papers from Stoke Park Colony, all proving that deficiency resulted from the inherent inability of cells in the cerebral cortex to develop. The opinions were so confident, and the facts were arranged to point so definitely in that direction, that one began to wonder whether so much confidence ought to be expressed in a subject so difficult. Most of the facts given were capable of a different kind of interpretation, such as Dr. Stewart had just given. If evidence were taken from adult pathological states it needed to be most carefully interpreted before being taken as indicative of what might happen in deficiency. Not enough was yet known to justify dogmatism on the neurological basis of deficiency, and a great deal of information was still needed, which, when it was forthcoming, must be interpreted very carefully and with an open mind. In much of the work hitherto done there had been important fallacies. It was said that no such disease as epilepsy existed or could exist, because the fit was simply the symptom of a number of different conditions, and in the same way it might be said that there was no such disease as mental deficiency, but that it was a legally defined state into which a number of different general states fitted. If one studied the brain of a mongol one learned something about a mongol, and, quite secondarily, something about mental deficiency.

Dr. G. R. A. RUDOLF gave the results of an examination of the plantar responses in a number of defectives as compared with those in children and in animals, but owing to the lateness of the hour he did not develop any hypothesis from his tables. In the same way Dr. MEYER, with the aid of a few lantern slides, discussed some of the recent work on the supragranular and infragranular cortex, and the various types of primitive cortex and how they might vary in different areas of the brain. Dr. F. C. SHRUBSALL took up the cudgels on behalf of the certifying officer. In assessing mental deficiency, he said, it was important to compare like with like, age with age, and environment with environment. Physical measurement and observation of behaviour for the ascertainment of mental defect had been long and widely used. Binet, for example, had used physical measurements. His own criticism of Professor Berry's psychogram was that it was too strong on the physical side and not strong enough on the mental.

Dr. KINNIER WILSON, in summing up the discussion, said that most of the findings had been negative. That did not mean that they had been elicited in vain. It was something to have cleared the ground. It was something to know that intelligence was not easily to be associated with this, that, or the other static structural factor. Dr. Earl had suggested that they were talking too much about intelligence and not sufficiently about emotion, and that conduct was to be the criterion. He did not, however, say anything about the basis of such emotional behaviour, and that was a lacuna in his observations. He had therefore set more problems for workers like Dr. Stewart and Dr. Ashby. They had now to try to find a measurement for the basis of emotion. What other brain characters could be measured? What about the optic thalamus? In the case of a notorious criminal who committed a particularly ghastly crime in California about three years ago the expert neurologist and psychiatrist who carried out a post-mortem examination was struck by the small size of the optic thalamus in proportion to the rest of the brain, and in conversation with the speaker afterwards this expert began to see the possible significance of it, though he had made the observation *apropos* of nothing in particular. Therefore, what about the optic thalamus? That was something more for the " measurement men " to carry out. Even though, again, the findings were negative, he would still say that they would be of value. Dr. Stewart had said nothing about the quality of cells of the cortex. He had shown a section suggesting that the idiot's brain was crowded with cells, but nothing was said as to their quality. It looked as though the determining factor might be the quality rather than the shape, size, number, or anything else. That brought in the chemical side, where, again, up to now, the results had been very largely negative. But he was anxious to point out that the negative results were by no means without value.

SELENIDE TREATMENT OF MAMMARY METASTASES

At a meeting of the Section of Radiology of the Royal Society of Medicine on January 18th, Dr. F. HERNAMAN-JOHNSON presiding, Dr. A. T. TODD read a paper on " The Selenide Treatment of Mammary Metastases."

Dr. Todd related his reasons for postulating a defence mechanism in cancer, similar in some ways to that seen in chronic infective diseases, and his experiments to find some substance that would stimulate this mechanism. He had found that cases refused further treatment by surgeon and radiologist could be benefited by colloidal selenide preparations followed by small doses of radiation. The defence mechanism was controlled by the reticulo-endothelial system, the cells of which were obliged to take up any electro-negative colloid which came their way. If the colloid in the course of its breakdown stimulated the metabolism of the cell, then a greater defence action resulted. The most suitable preparation found was a sulphur selenium colloid. Penetrating electro-magnetic waves caused the particles of selenium to ionize, and so made its action much more powerful. To get a feeble but continuous ionization effect in the defence tissue he had used selenium combined with the lead-like products of radium disintegration, impregnating the defence tissue with the colloid and activating the colloid by repeated small doses of x rays. The dose of both must be just enough to stimulate a very slight reaction, which indicated a temporary depression of defence ; this was followed by lasting augmentation. If the case was inoperable with a neglected primary growth, there should be a week or two of attention to sepsis and treatment with selenide, followed by a " toilet operation " to remove some of the diseased tissue and check haemorrhage and anaemia. Radium selenide should be given weekly until the incision began to heal. Then 2 c.cm. of sulphur selenide were injected intravenously. The reaction usually appeared in about four hours, but if it did not, or if it was delayed, the dose should be increased by 1 c.cm. until the reactive dose was attained. Immediate reactions were usually due to faulty technique. Vomiting should be checked by cerium oxalate or sips of novocain, and pain should be relieved by barbitones, salicylates, phenazones, or leeches. Opium paralysed the defence system, but leech venom stimulated it, and so did cobra venom, which would shortly be available. Metastases after incisional surgery should be treated by the routine method after full examination. Recurrences after radium surgery were usually non-reactive, but could be treated by low doses. Radium seemed to break down all defence, and intracranial recurrence should be specially watched for. Prophylactic treatment of the supposed surgical cure was one of the most promising fields for the treatment, and every patient should have the full system for a year. As there would be no reaction if there

were no cancer left, reaction was no guide to treatment, and the dose should be about 4 c.cm. of colloid and about 75 *r* of *x* rays. Dr. Todd gave the results in twenty-seven cases, all of which had been refused further treatment by surgeon and radiologist. Of five cases still being treated, one was doing badly and the others well. Two patients had died from pneumonia, one year and eighteen months respectively after apparent cure. Twelve were dead, most of them having exceeded their expectation of life, and eight had been discharged as apparently cured one or two years ago.

Dr. S. GILBERT SCOTT said that this was the first occasion on which the problem of prevention of metastases had formed the subject of discussion in any important medical society in England. This was remarkable, considering that the vast majority of fatal cases of cancer were due to secondary growths. The methods at present in use were too local in their application, both in space and in time, to help towards solving the problem of prevention of metastasis. After-care of breast cancer should be an integral part of treatment. The establishment of a department, with beds and a follow-through system, for the after-care of breast cancer cases at the Croydon General Hospital was a step in the right direction. A number of experimental workers had shown in rats and mice that small generalized doses of *x* rays, given at frequent intervals, created some form of immunity to tumour growth. The wide-field method had been installed at the London Hospital with a view to reproducing the experimental conditions of the research worker. The vanadic acid test was a valuable guide to the condition of the patient and the results of treatment. Dr. A. F. HARRIOTT COKE described this test, and showed the vanadic acid charts which were produced as a result of its use. He said that in asthma it had been shown that treatment and clinical improvement corresponded with restoration of the chart to normal. Cancer cases showed a similar disorder of the chart to that seen in the untreated asthma patient. It was therefore logical to try to alter the graph of the cancerous case. The test was sensitive enough to demonstrate changes in the serum from a dose of 100 *r* at 100 kV. It might be described as a study of the sedimentation rate in different degrees of acidity in the presence of vanadium.

Professor J. M. WOODBURN MORISON emphasized the value of Dr. Todd's work, which he had himself inspected and which any medical man could see, and suggested that the best method of estimating the results of treatment was to consider the figures of the expectation of life of the given case.

SOME UNSUCCESSFUL RESULTS WITH COLLOID

Dr. N. S. FINZI described his method of treating metastases, saying that his work did not clash with that of Dr. Todd, who only took cases with which radiologists could do nothing. He believed that the only method which did any good was a very full dose, to the local growth, of the highest possible voltage with short wavelength. Prognosis was much worse if the mediastinum was involved. It was not possible to give enough generalized radiation to do any real good, even if colloids were given as well.

Dr. J. H. DOUGLAS WEBSTER said that regional metastases in the lymph glands could be prevented and treated by large doses of radiation, and thought that distant deposits in the spine might be prevented by irradiating the scapular region and the abdominal fascia. His success in preventing dorsal spinal metastases by scapular irradiation supported Sampson Handley's theory of extension along fascial planes. He had not had any success with Dr. Todd's method. Dr. J. E. A. LYNHAM had had no success with colloidal preparations, but thought there was hope for these patients in the further extension of radiological methods. He had found some connexion between involvement of the skin and metastases in the spine. Dr. RALPH PHILLIPS recorded completely negative results from the application of Dr. Todd's technique to twenty cases. None of them had had any reaction from the dose Dr. Todd suggested. They had certainly felt better in themselves, and since an increase of the dosage had been made two patients had actually improved. He did not believe that there was any evidence whatever for the existence of any resistance to cells which actually belonged to the body.

Dr. TODD, replying, said that Dr. Phillips had not applied his method, an essential part of which was the production of minimal reactions. He stressed the importance of the psychological factor in any treatment of cancer, and said that the gloomy physician would prevent results from any form of treatment. The PRESIDENT testified to his own experience of Dr. Todd's method and his admiration for it. It was important enough to demand investigation by radiologists, so that at any rate they might settle the matter one way or the other.

EMOTIONS AND ENDOCRINES

At a meeting of the Liverpool Medical Institution on January 10th, with the president, Dr. J. MURRAY BLIGH, in the chair, Sir WALTER LANGDON BROWN, regius professor of physic at Cambridge, read a paper on "Emotions and Endocrines."

Sir Walter Langdon Brown said that three recent advances in our knowledge of the association between emotions and endocrines had led to a clearer view of the integration of the endocrine system. (1) The diencephalon was the nervous structure concerned with the expression of the emotions. This was illustrated by the case of a child whose emotional expression was blotted out by a tumour in the diencephalon. (2) The pituitary, which was so closely associated with the diencephalon, had become recognized as the leader of the endocrine orchestra. It translated the messages received from the diencephalon into chemical stimuli. The anterior lobe produced hormones of a protein character which, as Dodds had shown, stimulated the production of secondary hormones in the other endocrine glands of a simpler chemical structure, which in some cases had been synthesized and shown to be of the order of sterols. It was suggested that the pituitary in this respect acted as either a general stimulator or an inhibitor of the functions of the other glands, thus implementing emotional expression, rather than that it had specific hormones for each function attributable to it. (3) All nervous impulses had been shown to have a chemical mediator between the neuron and the tissue cell, and, indeed, between one neuron and another. In this respect, therefore, hormones were merely a special example of a general law.

Professor H. E. ROAF said that the result of an impulse passing down an afferent nerve was always a chemical change either in a muscle or in a gland. The interest of the recent work on adrenergic and cholinergic nerve endings was that the chemical change was traced a stage further back—namely, that it formed the exciting mechanism for the chemical changes characteristic of muscular or of glandular activity.

Mr. HUGH REID said that the practical applications of the observations made in Sir Walter Langdon Brown's paper were very far-reaching. For instance, in the case of gastric ulcer, Cushing had reported cases in which removal of a tumour from the diencephalon had been directly responsible for the formation of a gastric ulcer. He attributed this to injury to the nerve fibres passing from the region of the pituitary stalk to the hind-brain. Beattie had recently carried out researches extending these observations experimentally. Thus, from the point of view of aetiology, further physiological evidence was forthcoming that emotional disturbances were important factors in the causation of gastric ulcer. The shock and strain of driving a motor car could alone be a potent factor bringing about the well-recognized recent increase in the number of cases of this complaint.

Dr. S. BARTON HALL, speaking from the psychiatric standpoint, suggested that work correlating emotional and endocrine activities acted as an integrating factor in psychiatric approaches, thus contributing to the basis of the new psychiatry. He expressed the view that the day had passed when a psychiatrist could isolate himself

within conceptions of pure psychology or pure pathology, and that the gulf which had existed as between "mind" and "body" was being successfully bridged. Study of the physiological aspects of the emotions might bring us nearer to an understanding of the physiological significance of the vital impulse itself.

Professor HENRY COHEN emphasized the danger of drawing general conclusions from the superficial resemblance of body changes occurring in endocrine disturbances, for on further analysis the mechanisms of these might prove wholly unrelated. In hyperparathyroidism, osteoporosis was accompanied by hypercalcaemia and increased calcium excretion; in pituitary basophilism, osteoporosis was unaccompanied by these blood and urinary changes. The curious and absorbingly interesting emotional disturbances exhibited by the child with a teratoma involving the hypothalamus would be more convincing evidence of hypothalamic emotional control if such disturbances were the rule rather than the exception. In view of Dale's work it was imperative that the experiment should be repeated of anastomosing the central end of the phrenic nerve to the peripheral end of the cervical sympathetic; the statement was repeated from textbook to textbook that this procedure produced hyperthyroidism. The older clinicians had long taught the administration of digitalis as a prophylactic against cardiac failure in toxaemias; it was interesting to hear that recent pharmacological research supported this view. Professor Cohen accepted the expediency of the lecturer's dictum about employing a new remedy whilst it was yet effective; he preferred to teach the old tag:

> "Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside."

Mr. H. V. FORSTER described briefly a case of what he believed to be endocrine disturbance unavoidably following the use of radium to treat a malignant tumour pointing at the upper and inner quadrant of the orbit. In spite of the disappearance of the tumour the patient, a heavy-boned man of so-called "pituitary countenance," passed into a state of great lassitude and general ill-health not associated with any demonstrable evidence of secondary malignant deposits. The next stage was one of fully developed hyperthyroidism later showing auricular fibrillation and coming under Professor John Hay's care. The speaker believed that pituitary dysfunction had resulted from radium application not far distant from this important gland.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY

At a clinical meeting of the Aberdeen Medico-Chirurgical Society, held on January 10th, the president, Dr. WILLIAM BROWN, showed three cases of communicating internal hydrocephalus. The diagnosis was reached by the intraventricular injection of indigo-carmine solution. The cases had been treated by repeated ventricular and/or lumbar puncture together with the administration of hypertonic rectal salines. Lumbar or ventricular puncture was done according as the intracranial pressure, as estimated by the state of the fontanelles, demanded. He pleaded for submission of these cases to treatment early, as there did seem hope of improvement.

Dr. JOHN CRAIG gave details of two children in which "black eyes" were a prominent feature. One was a case of infantile scurvy; in the second case the "black eye" was due to secondary deposits in the skull and orbit from a neuroblastoma of the suprarenal gland.

Mr. ALEX. MITCHELL showed a girl with symptoms suggestive of cervical rib on the left side. *X* rays failed to show any evidence of cervical rib, and the symptoms were completely relieved by the division of the scalenus anticus muscle. He also showed a boy aged 6 who had had haematuria from a neoplasm of the right kidney. Laparotomy showed the tumour to be inoperable. The patient had been treated with deep *x* rays with considerable diminution in the size of the tumour and cessation of the haematuria. Mr. Mitchell also demonstrated an apparatus for the gradual reduction of congenital dislocation of the hip, and showed a series of skiagrams from a case in which reduction had been obtained. The process was a very gradual one, and in the case shown had taken four months before complete reduction was obtained.

Mr. N. J. LOGIE for Mr. A. FOWLER demonstrated a series of children who had had fractures of the forearm bones treated by open operation. The *x*-ray plates and the functional results clearly showed the excellence of the method.

Dr. H. ROSS SOUPER described a case of acute otitis media with meningitis and death within five days of the first symptoms; he also detailed a case of acute otitis media with meningeal symptoms, which rapidly subsided after paracentesis. Mr. J. H. OTTY reported on three cases of otitic meningitis resulting from chronic suppurative otitis media. Two of the patients recovered—one following translabyrinthine drainage, the other following radical mastoidectomy. In the fatal case meningitis occurred fifteen days after a radical mastoid operation. Haemolytic streptococci were obtained from the cerebrospinal fluid of the fatal case, but no organisms were recovered from examination of the fluid in the other cases.

METALS IN THE FOOD INDUSTRY

At a meeting of the Birmingham and Midland Section of the Society of Chemical Industry, held at Birmingham University on January 21st, a paper on "Metals in the Food Industry" was read by Mr. N. D. SYLVESTER, M.Sc.

The food chemist, Mr. Sylvester said, was as jealous of the purity of his product as the chemical manufacturer was of the purity of his fine chemicals, and one of his primary considerations must be the suitability or otherwise of the metals at his disposal. Three factors were of special importance. The first was the effect of the metal on the food and the amount of metallic contamination, the second was the effect of the food on the metal, and the third was the effect of washing and cleansing solutions on the metal. The action of washing and cleansing substances on the plant was often more serious than the action of the food. Metallic contamination was a matter of primary importance, and so far as possible it should be reduced to a minimum. The question of toxicity of the metal must be considered because the slightest traces of a metal such as lead could not be allowed, and no metal or enamel containing arsenic or antimony could be used in the food industry. The recent development of cadmium platings had made a further addition to the list of prohibited metals. Among the more important factors influencing corrosion of metals by food were: temperature, time of contact, presence or absence of air, formation of protective films derived either from the food or from the metal, and, lastly, the cleanliness of the plant. On this question it should be remembered that operatives would take a pride in keeping plant spotlessly clean when the results of their labours were readily apparent; therefore it was a definite advantage to use a constructional metal which would look clean when it was clean. Some of the modern stainless alloys were admirable in this respect.

Iron and mild steel were the widest-used metals in the manufacture of foods, as in most other industries, especially for machinery parts with which food did not actually come into contact. The modern tendency was to modify the iron and steel by the addition of other elements. Certain of these products stood out in a class by themselves, and their corrosion-resisting properties made them especially suitable for use in a very large section of the food industry, including vinegar, sauces, salt and salt water, acid fruits and juices, fresh and sour milks, fish pastes, onions, coffee, etc. Further, they were resistant to alkaline washing compositions. An enormous amount of research had been carried out to elucidate the corrosion which occurred inside a tin can, and the result was that to-day an increasing range of foodstuffs could be preserved by canning. Copper was not, judged by modern standards, a suitable metal for use in the food industry, but in the milk industry and the food

industry as a whole, tinned copper had found fairly extensive application. Chromium plating did not seem as yet to have found an appreciable use in the food industry, but if the quality could be improved to the present reliability of, for example, nickel-plating, it should have many applications. The use of silver had increased, and plant lined with silver sheet was particularly resistant to acetic acid vapours. Mr. Sylvester dealt at some length with nickel and its alloys, mentioning especially "inco" chrome nickel, or "inconel." Such metal appeared to be ideal for food processing in general, and where cleanliness and freedom from metallic contamination were matters of greatest importance, as in mayonnaise manufacture and in the preparation of fruit essences. Aluminium was suitable for use with acid foodstuffs, such as fruit, but it was necessary to observe the greatest care as regards cleanliness. Aluminium alloys were mostly constructional materials, and found no appreciable use in the food industry, though "birmabright," a corrosion-resisting alloy containing magnesium, could be used in all cases where aluminium was suitable, and its performance was generally superior.

CORRESPONDENCE

Maternal Mortality

SIR,—Much has been written in your columns recently on the subject of maternal mortality, the value of pelvimetry, and of ante-natal examination. It would appear that professional opinion is divided on these subjects. My object in writing this letter is mainly to draw attention to certain aspects of maternal mortality which would appear to have been overlooked or insufficiently stressed.

The first point which must be evident to any intelligent observer is the strong political urge behind the many speeches, and especially the inspired articles in the lay press on this subject. The proceedings of the recent Manchester hospital inquiry, at which political bodies were legally represented, indicated this, while speeches by the Minister of Health, Mr. Baldwin, and other politicians all support this consideration. Mr. Baldwin's speech, reported in your columns, at the dinner of the College of Obstetricians and Gynaecologists indicates the rather pathetic faith of the politician in political action as a means of putting everything right—in this instance, merely by framing rules and regulations. Foremost amongst such political activities must be placed the various women's leagues, societies, and what not which pass alarmed resolutions, send deputations to the Minister of Health, and hold drawing-room meetings, at which West End obstetricians sometimes make unfortunate statements.

It is to be deplored that a single woman should lose her life in childbirth, far less four out of every thousand confined; but the matter has to be regarded from a relative point of view, and in this respect it can be shown that the British maternal mortality is one of the lowest amongst civilized countries. Thus, per thousand, the maternal mortality in Chile is 7.5, in America 7, and in Germany 5.1. The two main countries with death rates lower than ours are Holland and Sweden, with, in each case, 2.6. But in the case of Sweden it has been shown in the final report of the Departmental Committee that such conditions as eclampsia and certain other complications are not included in the figures, and that if the Swedish figures were compiled in the same manner as the British their maternal mortality would be seen to be at least as high as ours. It is of the first importance that this relative position should be known and appreciated, as the impression has gained currency that our mortality is particularly high, and this impression is enhanced by such expressions as "appallingly high death rate." In the spate of propaganda now proceeding the favourable position of Britain in this respect is always suppressed.

A great deal has been said and written on the subject of prevention of obstetrical complications, but the fact has to be faced that, in the present state of our knowledge, a large proportion of obstetrical complications such as antepartum haemorrhage and toxaemia are either wholly or partly unpreventable. In this connexion the statement made in the final report of the Departmental Committee, that at least half of the maternal deaths are preventable, has caused much public concern, and has exposed the profession to entirely unearned odium. A perusal of that report reveals no justification for such a generalization, and it is not easy to see how a committee, sitting round a table, could appreciate the often difficult conditions in which many of the cases considered were attended. In the case of deaths occurring in one's own practice, in which all the facts are known, it is usually extremely difficult to assess how far, in a particular case, death could be or should have been prevented.

The difficulty of the position is shown by the number of remedies suggested, but one which appeals particularly to the official, and partly to the professional, mind is the establishment of a national maternity service. So far as can be seen, the only certain result of such a national service would be the expenditure of a large amount of public money, far in excess of any present estimate; there is no certainty, or even probability, that the maternal mortality would be reduced by the smallest fraction. On the other hand, a bureaucratic body would be set up with wide powers, and another step would be taken in bringing about State control of the medical profession. Again, much capital is made of the fact that the maternal mortality rate has not fallen in the last twenty years; but it is seldom mentioned that in the last forty years the rate has fallen from 5.5 to 4.1 per thousand births. With more exact certification and registration to-day it is one's considered opinion that maternal mortality is now definitely lower than was the case twenty years ago.

The main hope of improvement would appear to lie in intensive instruction in the medical schools in the value of antisepsis and in the dangers of unnecessary obstetrical intervention before or during labour; this is, generally, being done, but the beneficial results cannot be expected to appear at once. In this connexion the activities of the National Birthday Trust Fund and their well-intentioned desire to provide anaesthesia for every woman in labour deserve notice. One main thing only is certain about maternal mortality—that it is predisposed to by obstetrical intervention, and that the introduction of anaesthesia on a large scale has always increased the necessity for intervention. Therefore, if the Fund has its way, its activities will result in an increased death rate, as has been the case in Holland since anaesthesia has become more insistently demanded by the Dutch woman.

It cannot be too strongly emphasized that, contrary to public opinion, our maternal mortality rate compares at least favourably with that of other countries, and that it is a matter which has always gravely concerned the medical profession. To reduce a national mortality rate is a most difficult matter, and it is regrettable that the issue should have been confused by misrepresentations and half-truths, and by the political and social interference referred to. Finally, the importance of the woman approaching her confinement with confidence in herself and in her attendant is recognized by all, but the effect of the present scare publicity is all in the opposite direction, and a degree of nervous dread is now usual, while contraception is increasingly in demand.

The importance of the matter is my excuse for encroaching to so great an extent on your space.—I am, etc.,

GILBERT I. STRACHAN, M.D., F.R.C.S.,
Professor of Obstetrics and Gynaecology,
Cardiff, Jan. 14th. Welsh National School of Medicine.

A Diabetic Association

SIR,—We wish to draw the attention of the medical profession to the Diabetic Association that has recently been formed in this country.

The association exists primarily to provide an organization for the benefit and service of diabetics. It hopes to promote further study and research, and to safeguard the general interests of diabetics. It aims at improving those social and physical disabilities which handicap particularly the poorer diabetic, by increasing facilities for treatment and care. Thus it will establish convalescent homes, schools, and holiday homes for children, boarding houses, and restaurants where diabetics can obtain suitable food, all of which are badly needed. Information on these matters will be circulated among members by means of the *Diabetic Journal*, the first number of which is now published. The subscription, which includes the journal, is one guinea per annum for richer, 2s. 6d. for poorer, members.

Membership is open to all diabetics and those interested in the subject. Most doctors especially interested, at hospitals and teaching schools, have already joined and given their support. The undersigned are acting as their representatives in writing this letter. A good start has been made under the presidency of Mr. H. G. Wells, but the existence of the association must be unknown to at least 100,000 diabetics in this country. We would ask all doctors interested to join themselves and/or to bring the association to the notice of their diabetic patients, inviting them to become members.

The idea that those who have found renewed health and strength from a particular treatment should help to bring the same to others, less fortunate, is one that appeals to many. Full information, membership forms, journal, etc., can be obtained from the secretary, the Diabetic Association, 59, Doughty Street, W.C.1.—We are, etc.,

E. E. CLAXTON.
G. GRAHAM.
R. D. LAWRENCE.
OTTO LEYTON.
STELLA CHURCHILL.

London, Jan. 19th.

Anti-streptococcal Serum for "Rheumatic" Affections

SIR,—The correspondence on this subject reveals a state of lively interest which is doubtless born of disappointments in attempting to arrest the course and prevent the permanent heart lesions of acute rheumatic disorders by treatment with sodium salicylate.

During the past three and a half years I have personally used anti-streptococcal serum (scarlatina) in some three dozen cases of acute rheumatic arthritis, erythema nodosum, and chorea, while at the same time refraining from using salicylate of soda. The results obtained in the first twelve cases were recorded in a contribution (jointly with my former clinical tutor, now Surgeon Lieutenant W. A. R. Thomson, R.N.) to the *Edinburgh Medical Journal* in October, 1934, entitled "The Treatment of Acute Rheumatism by Streptococcus Antitoxin." These results were "good" in nine cases and "moderate" in three. In a control series treated with salicylate of soda the results were "good" in fourteen cases, "moderate" in three, and were classified as "failures" in ten, since they did not show any improvement after prolonged treatment with salicylate of soda. My experience in treating the remaining two dozen corroborates the earlier results. I have learned, in addition, that by giving a second dose or further doses in approximately 25 per cent. of the cases "moderate" results can be practically eliminated and "good" results assured. I accordingly consider that the method is worthy of a full trial by hospital physicians.

Drs. Coope and Pygott report that some of their cases tended to relapse after a period of improvement. These tendencies should be carefully observed, and, if there is the slightest recurrence of stiffness or fever, further injections will at once bring these under control. In one of my cases a third injection, and in another a fourth, was considered advisable because of the desire to have a completely "good" result.

The mode of action is probably not specific, and it possibly may be mainly one of protein shock. My reason for suggesting this is because I have just recently observed a satisfactory recovery from acute rheumatic arthritis in a case which I have treated by injection with normal horse serum, as prepared for me by Messrs. Parke, Davis & Co. This serum contained the same concentration of globulin as this firm's anti-streptococcal serum, which I have hitherto used in treating the series of some three dozen cases during the period to which I have referred.—I am, etc.,

JOHN EASON.

Edinburgh, Jan. 20th.

SIR,—I hope that the recent eulogy in your columns of the treatment of rheumatic affections with anti-streptococcal serum will not lead to its wholesale use. In my experience there are great dangers in this form of therapy in acute rheumatic subjects, and those who propose to try it should be warned to expect occasional very severe reactions, leading even to a fatal relapse.

The employment of anti-streptococcal serum in any case is hardly justified in such a self-limited and comparatively benign condition as erythema nodosum. The problem arises chiefly in connexion with prophylactic passive immunization to prevent a sporadic case of scarlet fever from spreading round a ward. In such a contingency the risk may have to be taken, but occasional alarming results must be expected. It is impossible to foretell which rheumatic cases will become reactivated, although, as a rule, children with rheumatoid arthritis are especially bad subjects for serum therapy. The brunt of the renewed rheumatic inflammation falls on the joints and the heart, but I have seen pleuropneumonia provoked, and in two cases a condition very closely simulating septicaemia. The reason for all this is obscure, and it is difficult to decide whether it is the streptococcal antitoxin or simply the horse serum reaction which is to blame. In my experience anti-streptococcal serum is particularly apt to lead to serious trouble, whereas anti-diphtheritic serum can be given with impunity. The French literature contains, however, descriptions of similar cases to mine after the use of anti-diphtheritic serum (*Bull. de la Soc. de Pédiat.*, 1933, xxxi, 451 and 500), so the danger does not seem to be entirely confined to anti-streptococcal preparations.

Attempts to cure acute rheumatism with anti-streptococcal serum were already made over thirty years ago by Menzer (*Zeit. f. klin. Med.*, 1902, xlvii, 109). Others have since been impressed with its value. More careful investigation, with proper controls (Hill, N. G.: Metropolitan Asylums Board Annual Report, 1928–9, 385, and Wilson, M. G., *Journ. Amer. Med. Assoc.*, 1930, xciv, 842) have failed to confirm these beneficial results. Unpleasant reactions produced by the serum have been reported by Hitchcock, McEwan, and Swift (*Amer. Journ. Med. Sci.*, 1930, clxxx, 497). Severe rheumatic relapses occurred occasionally, just as in Small's cases (ibid., 1928, clxxv, 639 and 650), immediately succeeding the serum reaction.

In my opinion there is thus ample evidence against the injection of anti-streptococcal serum in the treatment of acute and subacute rheumatic affections. The oral administration, as advocated by Dr. W. Broadbent in your issue of January 19th (p. 129), is an entirely different matter, and would appear not to carry with it the same risks as the more orthodox intramuscular route.—I am, etc.,

London, W.1, Jan. 19th. BERNARD SCHLESINGER.

Percussion of Cardiac Dullness

SIR,—It is with much interest and appreciation that I have read my friend Dr. Claude Wilson's presidential address upon the subject of recent advances in cardiovascular disease. I do, however, venture to express my conviction that percussion of the deep cardiac dullness is in the rheumatism of children (I do not say of adults with large, muscular, or fat chests) of great value. This conviction is based upon a long and particular experience, during which I have probably seen as much, if not more, acute carditis in young children as anyone in this country. The method of percussion needs care, and is one which is neither hard nor over-gentle. I venture to think that I have proved its value to many by direct instruction, and have shown enlargement of the heart sometimes a week before there have been signs of active pericarditis.

Originally I checked the results in fatal cases in the post-mortem room and, later, in less severe cases, by radiography. If all the cardiologists in the world wrote saying this percussion was unreliable I should not alter by one iota my opinion as to its value in these children. When, as I have seen over many years, student after student—yes, and doctors also—showing me how they percuss these hearts, I am not surprised that there is doubt as to its value, or that so many of them have no true conception of cardiac rheumatism in childhood. Year after year one hears the same story of a large effusion into the pericardium, etc., while year after year one demonstrates *x*-ray photographs of very large areas of cardiac dullness, called examples of pericardial effusion, which necropsy had shown were greatly dilated hearts with a thickened and inflamed pericardium and with no effusion sufficient to alter the extent of the dullness by a centimetre.

My reason for writing this letter is not that of aggression, but to point out that in the world fight for rheumatic children, desirable though it may be, and is, to have *x*-ray pictures, there must still be many cases in which it is not possible to obtain such evidence. Our fingers, our ears, and our sense of resistance we can, however, train, and we do or should always carry them with us. It is not of first importance to tell within a hair's breadth the enlargement of the heart in a rheumatic child, but it is of first importance to train students to detect with certainty, by percussion, that the heart is enlarged. This I firmly maintain is possible, and of all the signs of early rheumatic heart injury it is the most important, not excluding electrocardiographic tracings. These, when abnormal, are perhaps the most striking proof of some cardiac lesion, but for the broad, general recognition of early heart disease in children not the most generally practical, because they are not always to be obtained. When present they give an ocular proof, but in my opinion a heart may be dilated and damaged by early carditis without any change in some cases in the tracing.

If we depreciate percussion in childhood as unreliable, then I hold that we shall diminish the chances of detecting early cardiac rheumatism to the detriment of progress, not of scientific cardiology, but of the prevention of cardiac rheumatism in the young.—I am, etc.,

London, W.1, Jan. 21st. F. JOHN POYNTON.

Prognosis of Mitral Stenosis

SIR,—I have read with much interest Dr. Claude Wilson's paper on recent advances in cardiovascular disease in the *Journal* of January 19th (p. 93), and while appreciating his remarks on the harmlessness of the ordinary mitral systolic murmur, in the absence of other signs and symptoms, I feel that he does not sufficiently emphasize the seriousness of the diastolic murmur of mitral stenosis. He says: "They"—the mitral stenosis cases—"are not safe lives, and warning should be given; but this done, they may often be left to guide themselves," and then goes on to cite the case of the lady with mitral stenosis who, among other feats of physical endurance, has scaled mountain tops. No doubt, but as the solitary swallow is no true harbinger of summer, so is the case like the one cited nothing to go by when considering prognosis.

A medical friend of mine, with a harsh presystolic murmur resulting from rheumatic fever, went through the hardships of the war in France as a battalion medical officer for over two years, and is still going strong in general practice. But my experience of mitral stenosis is that it is by far the gravest form of cardiac disability met with in practice, not even excepting aortic regurgitation. I have had patients with the latter trouble live for many years, and, although a few have departed this life somewhat hurriedly, still they live longer and are better able to enjoy life than those with mitral obstruction. As to leaving the latter to guide themselves, I have found they more often hasten the inevitable, while a careful and reassuring control helps to delay it.—I am, etc.,

VINCENT P. NORMAN, M.D., M.R.C.P.

Bournemouth, Jan. 20th.

Digitalis in Pneumonia

SIR,—My short article on the treatment of pneumonia was necessarily dogmatic, and reasoned arguments for the condemnation of digitalis could not be given. The friendly criticism of DR. HUGH WOODS (*Journal*, January 12th, p. 79) provides an opportunity of briefly giving some of the evidence.

The modern use of digitalis in pneumonia is mainly due to the work of Cohn and Jamieson in 1917, which definitely established that digitalis had the same effect on the PR interval and T wave in pneumonia as in heart disease and in health. Cohn concluded that "digitalis did no harm and might be life-saving," and it was therefore given as a routine in the Hospital of the Rockefeller Institute, and its use became widespread, especially in the United States. Some ten years later doubt was expressed as to its effect upon the mortality rate, and advantage was taken of the exceptional opportunities at the Belle Vue Hospital, New York, to make a carefully controlled study. The results were reported by Wyckoff, Dubois, and Woodruff (*Journ. Amer. Med. Assoc.*, October 25th, 1930, p. 1243) and by Niles and Wyckoff (*Amer. Journ. Med. Sci.*, September, 1930, p. 348). Alternate patients were treated with digitalis, the others being used as controls. Identical clinical and laboratory investigations were made on all. Every patient was electrocardiographed daily during the fever and every other day thereafter. It was realized that in an acute disease the patient should receive the digitalis rapidly, but that toxic symptoms should be avoided. The study was spread over the two years 1928 and 1929. During the first year the dose did not exceed 0.15 cat unit per lb. of body weight. In the second year 10 cat units were given to patients under 150 lb. and 12.5 cat units to patients over that weight. These doses were given

in various fractions within roughly twenty-four hours. The difference in the results in the two years was insignificant.

Altogether 742 patients were investigated. Of 404 controls, 136 died, a mortality of 33.7 per cent. Of 338 treated with digitalis 140 died, a mortality of 41.4 per cent. This indicates that for every 100 patients in the control group that died there were 122 fatal cases in the digitalis-treated group. The mortality was higher in both the older and the younger age groups and in both sexes. The view that digitalis if given early might prevent the onset of auricular fibrillation or flutter was not borne out by the figures, as the incidence of these conditions was 4 per cent. in the controls and 3.9 per cent. in the digitalis group. Furthermore, in these cases the mortality in the controls was 52.9 per cent., whilst in the treated group it was 87.5 per cent. The authors believe that the routine giving of digitalis to patients with lobar pneumonia is dangerous, and they offer the grave warning that, possibly because of the effects of pneumonia toxin, digitalis may produce death not infrequently without any warning signs of the usual clinical manifestations of mild or profound toxicity.

Digitalis has undoubtedly been given under the impression that in circulatory failure the heart is principally at fault, but evidence is accumulating that serious failure is mainly peripheral, and due to loss or contractility of the minute blood vessels. Upon this digitalis can have no influence. It is uncommon to see the usual signs of heart failure except when an abnormal rhythm such as fibrillation or flutter is present, and experiments have shown that cardiac efficiency is not greatly impaired by the toxins of pneumonia. It has been the general experience of physicians that digitalis does not slow the heart in pneumonia, and Sir James Mackenzie maintained that digitalis was useless in acute infections except with fibrillation or flutter. Digitalis does increase the PR interval in pneumonia as in the healthy heart, but a depression of the function of conductivity is surely not to be desired in pneumonia, however valuable it may be in auricular fibrillation.

The statement that " digitalis should not be prescribed . . . It adds another poison to the heart, does not slow the febrile pulse, and has no action upon the peripheral failure," would seem to be justified not only by *a priori* reasoning but by clinical experience and statistical evidence.—I am, etc.,

Birmingham, Jan. 20th. W. H. WYNN.

Reactions following Gold Injections

SIR,—With reference to the article by Dr. Geoffrey Holmes in the *Journal* of January 12th (p. 58) on the above subject, I feel that the toxic effects of these injections should be more widely known, as there appears to be little doubt but that this method of treatment of rheumatoid arthritis is only in its infancy. It is as well that physicians should be made aware of some at least of the minor difficulties that beset its use.

Skin reactions seem to be more common and more severe than is generally admitted. I have seen an itchy dermatitis last for several weeks (during which time the treatment had, of course, to be suspended), resisting injections of hyposulphite, and causing marked insomnia owing to the pruritus. So far I have not been impressed with the efficacy of hyposulphite injections in clearing up a dermatitis. A purpuric rash can be very terrifying to the patient, especially if it is accompanied by severe epistaxis, oozing from the gums, and other haemorrhages. This type of reaction is obviously due to the underlying profound changes in the blood, which are at best ill understood and might well be of serious import.

The most violent skin reaction that I have ever seen occurred in a patient who, in addition to her rheumatoid arthritis, was also suffering from severe psoriasis. She had three doses of sodium aurothiomalate. The first was a watery solution containing 0.01 gram ; the second, also a watery solution, contained 0.05 gram. These were given at intervals of a week ; there was no reaction after either. The third dose was administered one week later. It was an oily solution containing 0.1 gram, injected intramuscularly, as the others were. It occasioned the reaction referred to, although the patient was under middle age and was not suffering from renal, cardiac, or hepatic disease. An exfoliative dermatitis set in which confined the patient to bed for several weeks. She was literally and truly raw from the crown of her head to the soles of her feet. Her nursing was a matter of the utmost difficulty, as she could not endure to have any portion of her body touched or moved. All her flexures were constantly oozing. Her face was so swollen as to be almost unrecognizable, and her eyes were closed. Hyposulphite injections were, of course, powerless to arrest the course of the illness, the damage being apparently done from the outset. It is, however, consoling to be able to add that this patient made an equally wonderful recovery, shedding her skin, nails, hair (to complete baldness), and with them her psoriasis and in large measure her rheumatoid arthritis—whether permanently or otherwise still remains to be seen.

It has been stated that these reactions represent intolerance rather than intoxication. One of my patients had a course of 2 grams of a gold salt given intravenously without any reaction and with marked benefit. Later (during another attack) she had a course of intramuscular injections of a different gold salt, and about three-quarters of the way through the second course she developed purpura, and suffered from severe insomnia for four or five weeks. Surely this is intoxication rather than intolerance? It is not uncommon to be able to demonstrate albuminuria for a day or so following an injection, which in itself suggests that the drug is fairly toxic. Any case showing albuminuria like this should, of course, be very carefully watched ; either the weekly dose should be lessened or the time interval between the injections should be lengthened. Glucose may, of course, be taken before each injection in the hopes of avoiding some of the unpleasant features. Some physicians also believe in the administration of liver, either by mouth or intramuscularly.

In conclusion it may be said that, although gold injections are already proving themselves a great boon, there still remains much to be done to bring this method of treatment to greater perfection.—I am, etc.,

Belfast, Jan. 15th. E. M. HICKEY.

Surgery for Pulmonary Tuberculosis

SIR,—The mortality of phthisis, as generally treated in this country, is indisputably high. Experience abroad has shown that collapse therapy, rationally practised, is without rival in the treatment of this disease. Upwards of 40 per cent. of patients have been able to return safely to work, compared with 12 per cent. when previously only conservative treatment had been employed. Recent papers in the *Journal* by Dr. MacNalty and Dr. Frederick Heaf have called attention to the urgent need for provision of surgical facilities. So far as the location of these facilities is concerned there are two alternatives. The thoracic surgeon may work at the sanatoria, or the patients may be brought to him in the city hospital. Which is preferable? Convenience and economy favour the latter, but there are other aspects of the problem requiring consideration. One of my objects in visiting recently some of the principal European thoracic surgical centres was to form impressions and obtain data relative to this point.

There is a group of sanatoria at Passy, in Haute Savoie, where patients in all stages of the disease are treated, and where collapse therapy is rationally practised. The nature of his lesion and the principles of the proposed treatment are explained to the patient. If artificial pneumothorax is inadequate or impossible he appreciates that a pneumolysis or a thoracoplasty is required. The patients are encouraged to regard the necessary operations as therapeutic incidents rather than as terrifying ordeals, and they see numbers of their fellows who have benefited therefrom. There are about five individual sanatoria in this group, which includes both private and philanthropic institutions, the smaller having accommodation for about 150 cases, whilst the largest can take almost twice that number. Although to some extent associated, and not more than a couple of miles apart, it is considered advisable to maintain surgical facilities in all. The instrumental equipment provided is complete, and, whilst the theatre accommodation is adequate, it is also simple and inexpensive: no unnecessary structural extravagances have been indulged in. The surgeon travels from Paris—a considerable distance—at regular and frequent intervals. He has kept careful comparative statistics, which show that although he employs, presumably, the same technique, the results are almost twice as good when the cases are treated entirely in the sanatoria as when they are operated upon in a city hospital and returned to the sanatoria later. Such a striking observation cannot be ignored, and the possibility of equipping all the larger sanatoria with the necessary facilities requires careful consideration.

Another point should be borne in mind: even if it is decided to deal with these cases in central institutions, provision should be made for the thoracic surgeon to visit in a consultative capacity the associated sanatoria at regular and frequent intervals; otherwise he is apt, from force of circumstances, to become a mere "plumber."—I am, etc.,

Newcastle-upon-Tyne, Jan. 14th. GEORGE A. MASON.

Surgical Antiseptics

SIR,—Dr. L. P. Garrod suggested in his valuable paper and letter published in the *Journal* of January 5th that an investigation might be made into methods for assessing the value of antiseptics. May I welcome this suggestion as one who has been accustomed for a number of years to the application of antisepsis to septic cavities. I should like to submit that at least some antiseptics can be assessed only by the results obtained on the living subject, and that in certain instances the results depend upon the method of applying the antiseptic.

If the chemical agent employed and the method of its application be really satisfactory in treating suppuration in a septic area, one application under favourable circumstances should be sufficient. To render a test trustworthy it is necessary that the suppuration should be kept up by sepsis alone, and not by other factors such as foreign bodies, etc., and also that the septic area should be accessible in its whole extent to the action of the antiseptic. Moreover, the test should not be made when acute inflammation exists, as it is then probable that the micro-organisms are in the substance of the tissues, and not merely confined to the discharge and the superficial cells. In the case of zinc salts dissolved in water the method of application is of importance. If one depends on the diffusion of a zinc salt into the surface of a wound or cavity coated, even after washing or syringing, by a film of infected discharge, the results are not striking. But if one makes use of the continuous electric current to introduce only the zinc constituent of the salt the results are certainly most striking. In the first case, where penetration depends on diffusion if the solution is hypotonic, a long time is needed for diffusion to introduce the drug. The time available for such a method of treatment is usually far too short. If the solution is hypertonic the zinc and the SO_4 constituents of the salt are both introduced into the surface and both act. In these applications we depend upon the zinc ion for the antiseptic action, but if the diffusion method is used we cannot prevent the action of the SO_4 ion also. Moreover, both ions are added to the ions already present in the tissues, and cause a certain amount of irritation and reaction of the subjacent tissues.

It is the great merit of the method of treatment with the help of the continuous electric current that from a weak solution of zinc sulphate the zinc ion alone is introduced. Moreover, it *replaces* ions in the tissues such as those of sodium, which are made to travel by the current towards the negative electrode placed on some other part of the body. The zinc ion, whether introduced by diffusion or by the electric current, combines with the albumin of the tissues to form a precipitate which is a bad culture medium for micro-organisms. It is antiseptic, and forms, in fact, a protective barrier at the surface. By the first method of application there is, however, reaction of the subjacent tissues; by the second method none.

An effective antiseptic action, and absence of irritation of tissues subjacent to those treated, are the two essentials for the treatment of suppuration of mucous membranes or raw surfaces.

An experimental investigation such as Dr. Garrod suggests, with determinations in the living body both of the best available agents and their method of application, will lead to some interesting results. In the specialty in which I am interested there is a plentiful supply of cases in the numerous sufferers from chronic otorrhoea who attend the out-patient department. The same must be true of many other surgical departments. If one selects severe cases of suppuration in which the suppuration is kept up by sepsis alone in an accessible position, one will soon be convinced from clinical evidence whether any particular chemical, and the method by which it is applied, are satisfactory.—I am, etc.,

London, W.1, Jan. 11th. A. R. FRIEL.

Anaesthesia for Tonsillectomy

SIR,—I read in your issue of December 1st, 1934, the very interesting article on tonsillectomy by Mr. Geoffrey Morey, with which I am in general agreement. I also read the letter by Mr. H. B. Shaheen, and the altogether too severe and condemnatory reply by Mr. Morey in your issue of January 12th, which is the cause of this letter.

The advantages which Mr. Morey claims in his article are precisely those which I claim for the method employed by Mr. Shaheen. The operation time is shortened—thirty seconds a case, as stated by Mr. Shaheen. There is a minimum of bleeding—less than a quarter of that under an anaesthetic. Shock to the system is very much less, notwithstanding Mr. Morey's remarks on this point, for frequently there is not a murmur made by the child during the operation, and in general very much less disturbance and shock occurs than when an anaesthetic of any kind is given. On speaking to the children within fifteen to twenty minutes after the operation, one could often obtain a smile from them. There was practically no difficulty in making the usual routine examination of the throat in a week's time; and, what is perhaps most important of all, there are no inquests. It is not the object of this letter to enter into any detail as to

method, but solely to assure Mr. Morey and others of similar views that Mr. Shaheen was perfectly correct in his statements. Neither do I advocate the general adoption of this method for all who perform the operation, but I am satisfied that if Mr. Morey will give the method a fair trial he will become a convert.

I am not speaking after a slight experience, for I have used this method on children of all ages during the last twenty years, averaging at least thirty cases a week at four hospitals, including four school clinics. In 90 per cent. of the cases the capsule of the tonsil in its entirety, including that round the supratonsillar fossa, was demonstrated after removal. I mention this only to show that the absence of anaesthesia does not result in partial removal.—I am, etc.,

Birmingham, Jan. 15th. FRED. W. SYDENHAM.

A Mental Hospital Clinic

SIR,—There are two sentences in Dr. B. H. Shaw's letter of December 22nd, 1934, which I feel should be placed in immediate proximity to one another.

"The more the true nature of the pathology of neuroses is masked by the cloudy verbiage of a pseudo-psychology and by energies directed into wrong channels," etc.

"Stress and strain of varying kind and degree acting on varying metabolism is the *fons et origo* of mental disorder. Molecular processes subserving cellular metabolism—such as the balance of ions obtaining in different tissues, and even different portions of the same tissue; the conditions subserving diffusibility and the influence of hormones thereon; the factors governing oxidation and reduction, intra- and extra-cellular; chemical mediators; the physiology of the neurone; and the effect of toxins—are paid little or no attention to."

There may somewhere exist an intelligence in which the finely spun thought conveyed in the words quoted above evokes an image of purest clarity. There are also doubtless many medical readers who, as they hastily scan these resounding word-sequences, are confident that their more gifted colleagues will not only understand but immediately recognize the connexion between these molecular, ionic, and hormonic activities and mental disturbances. But for one whose primary concern is the understanding of mental disorders, it is hard to see how stress and strain with all its physiological accompaniments can be the original source of mental conflict. Relatively few men suffer from psychosis after rowing in the Boat Race, and mountaineers are not as a rule addicted to neurotic complaints. If we rule out mental or emotional conflict as the cause of the condition of strain we can, with equal logic, attempt to prove that the vibrations of a speaker's voice recorded by a gramophone are the *fons et origo* of the mental activity of which they appear to be the product. It is assumed that, because this peculiar kind of explanation is couched in the idiom of obscure physiological processes, it therefore accords with the texture of concrete reality. But, in fact, have we any authority for assuming that the realities of psychic life can ever be explained by concepts that have been created for an entirely different order of facts?

Physiological conceptions are subtle tools that express as comprehensively as possible our intellectual apprehension of observable changes and functions in the field of bodily processes. Psychological conceptions are exactly similar intellectual tools adapted to the equally characteristic phenomena of the mental field. Our complete incompetence to superimpose the concepts of the one field upon the phenomena of the other is shown by the unbridgable chasm which divides the known structure of the brain from our empirical knowledge of mental life. If there exists no liaison other than supposition between brain and psyche, what grounds can Dr. Shaw possess for affirming his mysterious physiological conditions to be the source of mental disorders? If Dr. Shaw can show how any activity of the mind can be described, estimated, or explained by his assortment of so-called physical hypothesis, he will find every psychologist hanging on his words. But until he can do so we must hold to our view that the physical changes he has in mind must be regarded as functional accompaniments of the primary disorder of the mind.—I am, etc.,

H. G. BAYNES, M.B.

London, N.W.1, Jan. 14th.

SIR,—What is the inner meaning of these periodical flares-up between alienists and psychotherapists? Let us think. In this country, previous to the war, a person was either sane or he was insane. If sane, but just a bit nervous, he could be managed quite well by his family doctor—and there *were* family doctors in those days. If he became definitely mad he was put in an asylum, and there, as a rule, he remained, although he sometimes got better and was discharged. Previous to the war our medical schools usually gave us some lectures on insanity, but they took no cognizance of anything between that and mental health. The war changed all this. Shell shock began. Some of our "materialists" made an attempt to explain these as being due to "minute haemorrhages in the brain" and the like, but such theorizing soon fizzled out. It became clear to all, except those who did not want to see, that shell shock and its allies were due, in the main, to moral shock and nothing more.

The war has ended, but war conditions remain and shell shock is still with us, although it is now a shell shock acquired in the battle of life instead of in the Somme battles. This cries urgently for treatment, and neither the alienists nor the psychotherapists can tackle it single-handed. Nor is it a matter for the State, under any circumstances, to tackle. If, however, in any one locality the medical men, being known to each other and sufficiently interested in this pressing problem of nerves, care to form among themselves a clinic for the benefit of their poorer patients, then well and good. But in the superintendence of this clinic neither the asylum doctor nor the psychotherapist, as such, should have any prescriptive right. The appointment should be a personal one, going to "the man best fitted for the job"—in many cases, I should think, he might be a general practitioner. The aim of such a clinic should be, as Dr. Suttie has indicated, to keep the patient at his work and in his family, or to restore him to these; above all, it should keep him away from the asylum and from any association with cases which are past cure.—I am, etc.,

North Queensferry, Fife, Jan. 15th. ARTHUR J. BROCK.

SIR,—It would appear from Dr. Suttie's letter in the *Journal* of January 12th that he considers the role of the "professional psychotherapist" not properly medical at all. This would seem to be the case. Quoting from my letter of December 22nd, 1934, Dr. Suttie says: "We are told that 'disordered function is not *possible*' (my italics) 'without some underlying physical basis,' which basis is obviously conceived as pathological—that is, organic disease." I presume Dr. Suttie conceives individual differences in immunity, for example, as coming under the category of organic disease.

With reference to Dr. Suttie's second group, depending on "normal reactions to former abnormal stimulation," may I say that my letter of December 22nd was the result of my own reaction to certain most distressing cases which have been brought to my notice consequent on ill and suggestible persons placing themselves in the hands of professors of psycho-analysis (not appointed by

lay boards, which method, in spite of Dr. Suttie's statement to the contrary, is quite usual in general hospital appointments) with most disastrous and pitiable consequences to themselves—consequences which, if such new developments in specialism are to be identified with psychiatry, are calculated to bring the very greatest discredit on it. However, my reaction would appear to come under this second group of Dr. Suttie's, and I am apprehensive that I may be classed as a "psychogenic," at any rate suffering from some form of psychopathy and needing the attention of a psychotherapeutist.—I am, etc.,

Stafford, Jan. 15th. B. H. SHAW.

*** This correspondence is now closed.—ED., *B.M.J.*

Diphtheria Immunization

SIR,—I have received so many inquiries as to the advisability of "one-shot" active immunization against diphtheria that I feel obliged to ask the courtesy of your columns to make the matter clear. I am personally entirely opposed to any existing one-injection method except for institutions where the children are all young and under medical supervision. Even then I would not use the method personally. All strong toxoid preparations are liable to produce quite a percentage of reactions in older children, and sometimes in younger ones, and even the most refined alum-precipitate varieties cannot be held to be above reproach in this respect.

A determined effort is being made to persuade both local authorities and general practitioners to adopt the "one-shot" method. As far as my knowledge goes, local authorities have mostly resisted the very attractive idea of one injection. They realize the harm that may be done to the immunization movement by the production of quite unnecessary and brisk reactions. We who have been working for many years have achieved success by careful and thorough work, and now that a considerable section of the public have become converted to the idea of immunization it behoves beginners to refrain from upsetting the apple-cart. My strong advice to both general practitioners and public health authorities in the present state of the whole range of prophylactics is to adhere to three injections of toxoid-antitoxin mixture (T.A.M.). Older subjects may require toxoid-antitoxin floccules (T.A.F.).

People do not like their children to have lumps in the arm, such as are produced by alum-toxoids. My experience is that they infinitely prefer to come several times for attention when they know that the child complains of nothing at all in consequence. "One-shot" immunization is ahead of its time. Later, perhaps, a more satisfactory method may be evolved, but my advice for the present is to treat it as a deceptive mirage.—I am, etc.,

London, S.E.5, Jan. 15th. GUY BOUSFIELD, M.D.

Diphtheria in South Wales

SIR,—I have read with interest the article on diphtheria in South Wales in the *Journal* of January 12th, and the subsequent correspondence relating to it. The statistical fallacy into which your correspondent has fallen has been sufficiently exposed by Dr. Greenwood Wilson, but in view of the fact that the county borough of Merthyr Tydvil has been gratuitously selected as a suitable field for suggested investigation, I feel compelled to ask you to publish the following observations.

I am not in a position to assess from clinical observation the virulence of the disease here prior to 1932, and I shall refrain from drawing conclusions from the case mortality figures. The late medical officer of health does, however, make this significant statement: "The disease did not seem to react to large doses of antitoxin given intravenously and intramuscularly." I have examined in the limited time at my disposal the case records of 269 patients taken at random from those admitted with the provisional diagnosis of diphtheria during the year 1934, and I find that the amount of antitoxin administered was as follows:

15	cases received 0–16,000 units	... ...	No deaths
18	,, ,, 16,000 units ...	... ...	,, ,,
115	,, ,, 16,000–48,000 units	... ...	5 ,,
82	,, ,, 48,000–100,000 ,,	... ...	14 ,,
23	,, ,, 100,000–150,000 ,,	... ...	4 ,,
8	,, ,, 150,000–200,000 ,,	... ...	1 death
6	,, ,, 200,000–300,000 ,,	... ...	2 deaths
2	,, ,, 320,000 units ...	... ...	1 death

I publish the above facts fully aware of the apprehension with which some authorities, as well as general practitioners, view the administration of large doses. No case of anaphylactic shock occurred during the year. In the very severe cases—that is, those which received 48,000 units and over—the routine procedure has been to give the initial dose of 48,000 intravenously (except in cases of young children, in whom it is difficult), repeated in eight to ten hours intramuscularly, and then followed by doses of 16,000 to 48,000 units intramuscularly according to the local and general condition. Where these large doses were given—that is, 48,000 and upwards—one must come to one of two conclusions; either that the patient was admitted late in the disease (in addition to the five cases noted as being already moribund on admission), or that the disease, although notified early, was extremely virulent. Reliance cannot always be placed on the information given as to the date of onset of the disease, but I can quote from personal observation cases (contacts of diphtheria) where the fauces were normal in appearance on examination, but which developed a marked inflammatory exudate and oedema in twenty-four hours.

Three days ago a case was admitted to hospital which had been seen by a general practitioner of long experience and repute, who assured me that the throat had appeared normal twenty-four hours previously. On admission there was marked oedema of the fauces and a gelatinous membrane covering both tonsils, uvula, and soft palate; 32,000 units of antitoxin were administered intramuscularly, but on the following day the membrane was dark brown in colour, there was profuse nasal discharge, marked fetor of the breath, and the child appeared to be gravely ill.

If these cases are not virulent diphtheria, then what is? My experience during 1934 has been that the genuine cases of diphtheria admitted to hospital fell into four categories: (1) Those which were subclinical in type. (2) Those which were mild clinical diphtheria. (3) Those which were probably mild to begin with but were late in being admitted. (4) Those which were virulent from the beginning. The majority of cases came within the last two categories, and during November and December, 1934, and January, 1935, contrary to the findings of your correspondent, the virulent type of case has increased in number. If it is true that the "gravis" strain is associated with the more severe clinical manifestations, and if corroborative evidence of the virulence in Merthyr is sought, then I may add that all positive swabs examined at the Public Health Laboratory, Cardiff, since October (when the investigation was commenced in relation to the strain) have been found to be of the "gravis" strain.

With regard to the suggested need for investigating in this borough I wish to present the following facts. The case mortality (I am not discussing this in relation to virulence) in the county borough of Merthyr Tydvil from 1911 to 1920 was 15 per cent.; in 1921–7 it was 11 per cent.; in 1929, over 13 per cent.; in 1930, 10.5 per cent.;

in 1931, 10.3 per cent. ; in 1932, 3.63 per cent. ; in 1933, 8.23 per cent. ; and in 1934, 8.51 per cent. (provisional). It is interesting to compare and to contrast the figures, which I have before me, for some neighbouring areas, where the case mortality varied from 2 per cent. to the unusually high figure of 36 per cent., the majority falling between 2 and 15 per cent.

With regard to the measures for control, diphtheria cases are notified by telephone or personal visits of the doctors to the public health department ; patients are removed to hospital by motor ambulance ; contacts are dealt with in the usual way, are swabbed, and, if positive, the virulence test performed, etc. In July of 1934 the parents of the school population of approximately 12,000 children received a pamphlet warning them of the serious nature of the disease and offering the children immunization. The parents of 4,500 children have signified their willingness to have their children immunized, and since the beginning of September, 1934, 769 have been Schick-tested, 738 have received three injections of T.A.F., and 421 have been partially immunized. If your annotator is interested in preventive medicine in South Wales, then I invite him not to obstruct the progress of immunization by such a Laodicean pronouncement as that which concludes his article.—I am, etc.,

T. H. STEPHENS.

Public Health Department, Merthyr Tydvil,
January 19th.

London University and its Medical Schools

SIR,—Sir Ernest Graham-Little's letter in your issue of November 24th, 1934, has called forth the views of so many highly qualified and distinguished professional men that a layman's only excuse for intruding must be a desire for information on certain aspects of a subject in which he has for many years been keenly interested.

The point that strikes me is this: Whether Sir Ernest intended it or not, has he not opened up a question of far greater consequence than "a domestic concern" of the University of London—a question which concerns, indeed, *every* university, if not ultimately the health of the nation as a whole? Is not the problem really one as to whether it is a practicable possibility, assuming it be desirable, that the academic degree of a university should be at the same time a licence to practise? I venture to think that experience has shown that it is not practicable. The correspondence evoked by Sir Ernest's letter seems to confirm this view.

A degree of a university is, and I hope always will be, evidence of a definite standard of academic education, and must not, I think, be confused with a legal qualification—a test of technical ability—to practise a profession. A university degree in law or in divinity, for example, does not *ipso facto* give the right to the graduate to practise his profession ; for the Law Society, the Inn, or the bishop demands an examination in what may be called the technical aspect of the graduate's vocation. And, be it noted, a university degree is not a *sine qua non* for the solicitor, barrister, or minister of religion. Why, then, should the medical and surgical degrees of our universities be the only academic distinctions which we are content to leave at the level of a licence to practise?

As long ago as 1872 this position was recognized, for in that year, when there were in England only four universities—Oxford, Cambridge, London, and Durham—granting registrable medical degrees, they, together with the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London (the only other corporations granting registrable qualifications), prepared a scheme for constituting an "examining board in England" for the purpose of conducting a common final examination for admission to the *Medical Register* ; and the university degree was to be conferred only on those who, being otherwise eligible, had passed this examination and were, in fact, eligible to practise their profession. Why this scheme did not materialize—a legal point in the Charters of one of the bodies concerned prevented its accomplishment—is of little consequence now, but its ashes remain in the present "examining board in England" of the Royal Colleges—popularly known as the Conjoint Board. Various other attempts—always with the same object in view, and generally on the initiative of the Royal Colleges—were made during the subsequent twenty-five or thirty years, but the rapid rise and development of new universities—each with its own vested interests to consider—added to the difficulties of each succeeding effort.

To-day there are eighteen universities and five licensing corporations in Great Britain and Ireland (England alone has ten universities, besides the two Royal Colleges and the Society of Apothecaries) who grant qualifications in medicine and surgery which are admissible to the *Medical Register*. An analysis of the figures published by the General Medical Council over four recent years shows that, as far as the twelve licensing bodies in England are concerned, the average percentage of passes in the subjects of medicine, surgery, and obstetrics varies from 53.47 to 80.12. The difficult conditions, both educational and economic, of the overcrowded and ever-growing curriculum of study demanded of the medical student to-day only emphasize the necessity for some sort of co-operation between the various licensing bodies. As far at least as England alone is concerned such co-operation should not be difficult, and, in fact, I believe that draft plans for some such scheme are actually in existence.

And the alternative? If a movement in Parliament, quite possible in these days of democratic control, should suggest the institution of a medical service safeguarded by a State examination, that movement will have behind it the example of other countries. The development is quite a possible one, and would it not be well that the universities and corporations should agree among themselves now upon a common form of entrance rather than await action from without? It does not require imagination to visualize the result. Every university and licensing corporation will at once lose its own individuality, as far at least as medical education is concerned, and not even vested interests will save it from becoming little more than a cog in the wheel of State, oiled and driven by a bureaucratic Ministry of Health with the full support of the public. If, on the other hand, some such scheme as has been indicated were actually agreed upon *now* by the universities and corporations concerned, whereby one common final qualifying examination for admission to the *Medical Register* were instituted, medical education and practice in this country would be in an impregnable position when the attack is launched from the political side.

As I am a servant of one of the bodies concerned, and as I express purely my own personal views, I hope I may be allowed to sign myself merely

A LAYMAN.

January 21st.

Corporal Punishment for Girls

SIR,—May I congratulate you on publishing the correspondence on corporal punishment for girls? It is serving an extremely useful purpose. Would it be too much to ask those who, like Dr. Belam, quote Solomon as an authority on education, to consider the result of Solomon's theory on his own children? Rehoboam is typical of the usual person brought up with corporal punishment, his one idea being to transfer it in an aggravated form to other people. To the male doctors who speak so lightly,

and probably in accordance with sound theory, of menstrual pain, I should like to say that, however much we may blame, as Dr. Belam does, the mothers for the pain that girls suffer at these times, none the less there is no doubt that many of them do suffer very considerably. With our modern knowledge of the effects of corporal punishment on both sexes by the stimulation of premature sexual feeling, it is surely only necessary for the enlightened public to be made aware of the dangerous practices in the schools for pressure to be brought so that they shall cease.—I am, etc.,

Macclesfield, Jan. 19th. CHARIS U. FRANKENBURG.

Physical Education

SIR,—May I say how glad all interested in the subject will have been at the inclusion of an article on "Physical Education" in your issue of January 19th (p. 116). Sir Hilton Young, Sir George Newman, Professor L. P. Jacks, and other eminent speakers have lately deplored the lack of facilities for public physical training in this country. Greater enthusiasm has already been shown, but two factors among others will help to ensure full and permanent value from physical work; first, expert instruction, the teachers being parallel in status and qualifications to specialists in academic work; and, secondly, co-operation between teachers of physical training and members of the medical profession.

The Ling Association of Teachers of Swedish Gymnastics has noted with keen anticipation of further co-operation between the two professions the announcement in the *Times* (January 6th) that, in response to an appeal by Sir Hilton Young, the British Medical Association was considering the appointment of a committee to discuss means of improving the physical and mental development of the nation. In 1930 an important forward step in the establishment of sound physical training was made when the University of London, in response to a petition submitted by the Ling Association and other authorities, instituted a diploma in the theory and practice of physical training. The Ling Association also hopes before long to be instrumental in the forming of a federation of gymnastic teachers' associations. This association is the recognized body of fully trained teachers; its members hold posts in schools and colleges, and also organize the work in most districts. Lately, to meet the new demand, many "keep-fit" movements have been founded in various parts of the country; their growth has been phenomenal, particularly in distressed areas such as Lancashire and Sunderland, where many thousands of women and girls are now taking part in regular classes. Such work is of national importance in the development of the individual; the means of approach is a physical one, but the result, if scientifically taught, is on the complex whole, body and mind.—I am, etc.,

PHYLLIS C. COLSON,
The Ling Association of Teachers of Swedish Gymnastics.

10, Mecklenburgh Square, W.C.1, Jan. 22nd.

Arterio-venous Aneurysms

A Request

SIR,—I am anxious to obtain statistics relating to the influence of arterio-venous aneurysms on the heart musculature, blood pressure, etc. I am sure that there are many such cases following war injuries under medical supervision throughout the country. I should feel much indebted to those who would supply me with details as to age, sex, site, duration, pulse rate, exercise tolerance, cyanosis (local and general), respiratory rate, blood pressure (both general and distal to the site), myocardial condition, and the frequency of anginal attacks, if any. Any or all of these details—or other interesting facts relative to a case—would be most helpful in my survey of this condition. Would your readers kindly help me in my analysis?—I am, etc.,

CYRIL J. MURPHY, M.D., F.R.C.P.I.
Meath Hospital and County Dublin Infirmary,
Dublin, January 21st.

Courses for Ship Surgeons

SIR,—I was very sorry to learn from Dr. John Hill's letter in the *British Medical Journal* of January 5th that the courses of study for ship surgeons were so poorly supported. As one of the three who attended the first clinical course at the Seamen's Hospital, Greenwich, a few years ago I should like to bear testimony to its usefulness. I have attended quite a number of post-graduate courses during my professional career, but in my opinion this was the best of them all. Our teachers spared no trouble to help us in every way, and, especially as regards the surgical part of the course, concentrated their energies on those points which were essential to the efficiency of a ship surgeon. It is extraordinary that such a course should fail to be supported in the leading maritime country of the world, but the fault does not lie with its organizers or with the teachers.—I am, etc.,

J. G. MCNAUGHT,
Lieut.-Colonel R.A.M.C. (ret.).

Penzance, Jan. 16th.

Obituary

W. H. B. BROOK, M.D., F.R.C.S.

Consulting Surgeon, Lincoln County Hospital, and late Coroner for the City of Lincoln

Dr. William Henry Breffit Brook, who died on January 14th at Lincoln, after an illness lasting several months, was born in 1864, and received his medical education at St. Bartholomew's Hospital. In 1887 he graduated M.B., B.S., winning the gold medal in forensic medicine and being awarded honours in medicine and materia medica. In the same year also he received the diplomas M.R.C.S., L.R.C.P. Two years later he obtained the F.R.C.S., and in 1890 he proceeded M.D. He began a distinguished career at the Lincoln County Hospital as a student aged 20, attending to dressings in the surgical wards. Five years later he became the sole house-surgeon there to an institution then of a hundred beds. In 1900 he was appointed honorary surgeon on the retirement of his uncle from that post, and held it until last March, when he was elected consulting surgeon, He was also consulting surgeon to the Spilsby and Skegness Cottage Hospitals, the Willingham Hospital, and the Lincoln Maternity Home, and consulting physician to the Lincoln General Dispensary. During the war he held a commission as Lieut.-Colonel in the R.A.M.C.(T.), and was in charge of the 4th Northern General Hospital.

In 1910 Dr. Brook was sheriff of Lincoln, and in the following year he was appointed coroner for the city. He was also a justice of the peace, and when the Children's Act came into force he was appointed chairman of the juvenile panel. In 1928 he became chairman of the probationary committee and of the house committee of the remand home, and a member of the committee for slum removal. He was a prominent Freemason, a Past Master of the Ermine Lodge, and held high rank in the Rose Croix and Knights Templar. He was Provincial Grand Senior Warden in 1913. He brought into being a Freemasons' library, and his sustained interest in

this led to his appointment as Librarian of the Province. Other appointments held by Dr. Brook included those of municipal charity trustee, a governor of Lincoln School, and a member of the library, museum, and art gallery committee of Lincoln City Council. In 1891 he had taken part in the formation of the Lincoln Diocesan Association of Lay Readers; he served as honorary secretary for many years, and was then master until his death.

Dr. Brook joined the British Medical Association in 1888, and was President of the Midland Branch in 1911. A man of wide outlook, of great attainments, and of still greater human sympathies, his death is mourned by a very large circle of friends. The funeral service in Lincoln Cathedral was attended by a great concourse of those who had appreciated his long labour for the welfare of the city and of its hospitals. Before he died he expressed a wish that flowers should not be sent, but that the County Hospital which he had served so long should benefit by special subscriptions. He leaves a widow, two sons, and one daughter.

JOHN SHAW M'LAREN, M.B., F.R.C.S.ED.

Formerly Assistant Surgeon, Edinburgh Royal Infirmary

The death occurred on January 13th at Chelsea of Dr. John Shaw M'Laren, who was at one time a prominent teacher in the Edinburgh Medical School.

After graduating M.A. at Edinburgh in 1879 Dr. M'Laren studied medicine and graduated M.B., C.M. in 1883, becoming a Fellow of the Royal College of Surgeons in 1887. He was early appointed an assistant surgeon to the Royal Infirmary of Edinburgh, and lectured in surgery in the extramural school. Becoming convinced of the need for surgeons in the mission field, he offered his services to the Foreign Mission Committee of the United Free Church of Scotland, and was appointed to Rajputana in the North-West of India. He took up work there in 1902, and speedily became much sought after as a consultant and operator. His hard work resulted in a breakdown some two years later, and he was found to be suffering from tuberculosis; this necessitated a two-years retirement to Nordrach for treatment. Returning to India, he carried on surgical work at the mission station of Nasirabad for nine and a half years, and was particularly concerned in teaching operative surgery to Indian women doctors. In 1916 he resigned his appointment as a missionary and returned to Edinburgh for the education of his family, removing some years later to London. Dr. M'Laren had many interests outside medicine and surgery, among which was a great love of music. His widow, who was a sister of the late Dr. Elsie Inglis, survives him, with two daughters and a son. In 1898 he was joint honorary local secretary of the Edinburgh meeting of the British Medical Association with Dr. R. W. (now Sir Robert) Philip, who presided over the next annual meeting held at Edinburgh, in 1927.

MARK FRANCIS CAHILL, F.R.C.S.I.

Belfast

Dr. Mark Francis Cahill died at Belfast on January 12th after a prolonged illness. He was born in Dublin in 1869, and was the son of a well-known medical practitioner. He qualified at the Royal College of Surgeons in Ireland in 1891, and ten years later proceeded to the Fellowship of that body. In addition he gained the M.B. degree at the University of Durham in 1899. Although he never practised as a barrister, he had been called to both the English and the Irish Bars.

Cahill was of a retiring and studious disposition, but his strong sense of duty to his brother practitioners induced him to take a prominent part in the medical life of Northern Ireland. A member of the British Medical Association, he remained a member of the Executive Committee of the Belfast Division until his death. It was perhaps in work connected with the National Health Insurance Acts that his most valuable services were rendered to the medical profession in Ulster. A member of the Insurance Practitioners' Central Committee, his clear vision and wide knowledge of legal and parliamentary procedure was invaluable.

He practised in Belfast for over forty years. He enjoyed the confidence and respect of his colleagues and the public, and the news of his death was received with the deepest regret.

THE LATE MR. ANDREW WYLIE

Sir JAMES PURVES-STEWART sends the following appreciation of Mr. Andrew Wylie, who died suddenly from coronary disease at Bridge of Allan on January 12th: As a laryngologist and rhinologist Andrew Wylie's professional skill was of the highest order; he combined remarkable manual dexterity with a gentleness both of hand and of heart. He was singularly modest, the soul of honour, devoid of vanity, and incapable of an unworthy or ungenerous action. His chivalry and hospitality were proverbial. To his friends, to his patients, and to his less fortunate colleagues he rendered innumerable kindnesses, and always in an unobtrusive way. His sudden death from coronary thrombosis will leave a gap in the lives of all who knew him. He leaves behind him a wide circle of friends, whose sympathy will go out to his widow in her irreparable loss.

Dr. GEORGE HENRY WEST JONES, who died on January 3rd after a long illness, will be deeply regretted by all who knew him. The son of a doctor, he was educated at Repton and went to Guy's Hospital, where he qualified L.S.A. in 1878 and M.R.C.S.Eng. in 1879. It was always a matter of regret to him that, by reason of his father's insistence that he should return and help him in his practice, he was unable to take up any house appointment at Guy's. For over fifty years he carried on a large and busy practice in Eckington and the neighbouring part of Derbyshire, where he was universally beloved and esteemed. He was a member of the British Medical Association and of the Sheffield Medico-Chirurgical Society, of which he became president in 1903. He was also a member of the Derbyshire Panel Committee, the meetings of which he attended with great regularity. In 1883 he married Ada Margaret Stone of Beighton, and there were three daughters, all of whom survive him.

Dr. R. BRUCE LOW died on January 6th at Lambeth Hospital at the age of 53. His father was the late Dr. R. Bruce Low, C.B., formerly second assistant medical officer of the Local Government Board, and a well-known authority on epidemiology, who for so many years rendered distinguished service in the cause of public health. He was educated at Dulwich College and then proceeded to the University College Hospital for his medical training. After qualifying M.R.C.S., L.R.C.P., he left this country in 1907 for the East, to serve as a medical officer to the Government of Sarawak. In 1910 he entered the Colonial Medical Service, and became medical officer to the Government of the Straits Settlements. During the war he served as a major in the R.A.M.C. On demobilization in 1920 he was appointed a medical officer of the Ministry of Health, where he served for a time under the late Dr. R. J. Reece. In 1923 Dr. Low joined the medical staff of the Welsh Board of Health, and continued with this Department until his death. The following tribute comes from Dr. D. LLEWELYN-WILLIAMS, medical member, Welsh Board of Health: I found him a most delightful, willing, and loyal colleague. He had a kindly manner, was very sociable,

and was an ideal companion. He was a man of wide experience and a sound administrator. Like his distinguished father, he was a good epidemiologist, and was generally very successful in investigating the origin of outbreaks of disease in various parts of Wales. He conducted several inquiries into health problems in Wales, and by his tact and courtesy was able to influence local authorities to carry out many much-needed improvements. In course of time he became a favourite with members and officials of local authorities, who learnt to appreciate his judgement and wise recommendations. Dr. Bruce Low's premature death is a great loss, not only to his colleagues in the Welsh Board of Health, but to the public health service generally.

The Services

DIRECTOR R.A.F. MEDICAL SERVICES

Air Commodore Alfred William Iredell, Principal Medical Officer at the Royal Air Force Headquarters, Inland Area, has been appointed to be Director of R.A.F. Medical Services at the Air Ministry from March 1st, in place of Air Vice-Marshal John McIntyre, who retires from the R.A.F. on that date.

DEATHS IN THE SERVICES

Lieut.-Colonel Benjamin Frazier Hamilton, R.A.M.C. (ret.), died in London on January 10th, aged 79. He was born on April 18th, 1855, was educated at St. George's, and took the M.R.C.S. in 1878, and the L.R.C.P.Lond. in 1882. Entering the Army as surgeon on January 31st, 1885, he became major after twelve years' service, and retired on January 31st, 1905. After his retirement he was employed at Topsham, Devon, in 1905, and at Lancaster in 1911. When the war of 1914–18 began he rejoined from August 5th, 1914, and was given a brevet lieutenant-colonelcy from June 3rd, 1919. He also served in a campaign against the Yonnie tribe on the West Coast of Africa in 1887–8, and received the African medal with the clasp. His surname was originally Zimmerman; he changed it to Hamilton at the end of the war. At the Annual Meeting of the British Medical Association held at Exeter in 1907 he was secretary of the Naval and Military Section.

Universities and Colleges

NATIONAL UNIVERSITY OF IRELAND

At a meeting of the Senate on January 17th, with the Chancellor, Mr. Eamon de Valéra, in the chair, the reports of the examiners upon the medical and dental examinations, December, 1934, were considered, and passes, honours, etc., awarded.

The Senate appointed the following representatives: Professor J. B. Butler, M.B., B.Ch., B.A.O., tercentenary celebrations of the National Museum of Natural History, Paris; Professor T. Walsh, M.D., Royal Sanitary Institute Congress, Bournemouth; Professor J. Sperrin-Johnson, M.B., Commonwealth Botanical Congress, London; Professor W. D. O'Kelly, M.D., Royal Institute of Public Health Congress, Harrogate.

Dr. J. F. O'Carroll was appointed a member of the governing body of the University College, Dublin.

BRITISH POST-GRADUATE MEDICAL SCHOOL

The undermentioned appointments of medical staff have been made by the governing body of the British Post-Graduate School at Hammersmith. *Obstetrician and Gynaecologist:* Geoffrey William Theobald, M.D., M.R.C.P., F.R.C.S., F.C.O.G.; *First Assistant, Department of Medicine (Neurological):* Edward Graeme Robertson, M.D., M.R.C.P.; *House-Physicians:* Wilfred Ingram Card, M.D., M.R.C.P., Norman Vogelsang Birrell, M.B., Ch.B., D.P.H., Thomas Russell Cumming Fraser, M.B., Ch.B.; *Gynaecological House-Surgeon:* Maurice Alexander Robertson, M.B., Ch.B.; *House-Surgeons:* Murray Thomson Greig, M.B, Ch.B., B.Sc., Joseph Ellis Ellison, M.B., B.Ch., B.A.O.

The following gifts have been made to the Library of the School: by the proprietors of the *Lancet*, bound volumes of the *Lancet* from the year 1823; by Dr. T. Clifford of Stalybridge, *Medical Annuals* from 1893; by Mr. J. Lewin Payne, Guy's Hospital, *Proceedings of the Royal Society of Medicine* (twenty-five volumes).

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

THE HOUSING BILL

The House of Commons, which reassembles on January 28th, will devote January 30th and 31st to a second reading debate on the Government's Housing Bill. The intervening days are appropriately allotted to consideration of the votes for the Unemployment Assistance Board, for the Depressed Areas Fund, and for grants to local authorities in depressed areas. Appropriately, because the Housing Bill, besides creating employment over a long term of years, is presented as a national policy for reconstructing the outworn urban areas in which unemployment is rife, and for terminating the overcrowding so often associated with it.

The objects of the Housing Bill are to establish a legal definition of overcrowding, to place on housing authorities an obligation for rehousing inhabitants in excess of that definition, to initiate a survey of the housing accommodation in England and Wales, and to secure the rebuilding, according to prearranged general plans, of the antiquated or unsuitable "cores" of English cities and towns, in so far as that last purpose is not effected by the Slum Clearance Act. A similar Bill has been introduced for Scotland. Operated in conjunction with the slum clearance powers of 1930, the new Bills would bring about, over a period of twenty or thirty years, the replanning and reconstruction of those decayed or merely dingy inner areas which modern urban communities have inherited from the seventeenth, eighteenth, and early nineteenth centuries. The Bills now awaiting discussion would impose a duty of redevelopment upon the local authorities in urban areas with more than 50,000 population. These authorities would have to furnish Whitehall with redevelopment plans, showing the proposed new or wider streets, proposed open spaces, and the areas to be used for housing the working classes. To ensure that these workers have a chance of new quarters on or near the old sites, Parliament is asked to approve subsidies so adjusted as to encourage the provision of flats in central districts. Whitehall has decided that the policy of municipal suburbs laid out with cottages and gardens has failed to help the overcrowded and lower-paid workers of the great cities and the industrial towns. Besides clearance and redevelopment of sites, the new Housing Bill for England authorizes the acquisition of old houses for reconditioning, and also gives local authorities power to approve replanning or reconditioning by a private owner. Property, not being slums, which is acquired by an authority for clearance is to be paid for, and adjustments are made about compensation for property in slums. Local authorities will have a duty to ensure in advance alternative accommodation for the surplus families cleared from overcrowded houses or removed under clearance schemes. The Bill also offers inducement for replacement or reconditioning of houses in rural areas by local authorities.

ANNUAL RETURNS ON OVERCROWDING

Medical officers of health in London or of boroughs and urban and rural districts elsewhere in England and Wales, will have the duty of furnishing annually to the Ministry of Health particulars of overcrowding, and of any houses where overcrowding had been abated but which had again become overcrowded. A house is to be deemed to be overcrowded if any two persons over 10 years of age of opposite sexes, not living as husband and wife, must sleep in the same room, or if the proportion of persons to rooms exceeds that set out in a schedule of the Bill. Where a house consists of one room, two inmates are to be permitted. Infants under a year old will not be counted, and a child under 10 years counts one-half. For two rooms the permitted number will be three persons; for three rooms, five; for four rooms, seven and one-half; and for five rooms or more, ten persons, with an additional two for each room in excess of five. These proportions apply where the rooms each are 110 square feet or more

in floor space. For a room between 90 and 110 square feet, one and one-half persons are allowed; between 70 and 90 square feet, one; between 50 and 70 square feet, one-half; and for any room below 50 square feet, *nil*. Local authorities may give temporary licence for more dwellers in a house, and in specially difficult areas the Minister may modify the standards for a prescribed period. Landlords will have a statutory duty to inform a local authority of overcrowding. Overcrowding by a tenant will be a punishable offence.

MUNICIPAL AUTHORITIES AND THE BILL

In such matters the Ministry of Health is to have the advice of a Central Housing Advisory Committee. Though the Government has not adopted the proposal that housing should be transferred from municipal bodies to a National Housing Trust, the Bill provides that local authorities may trust any housing association with the work of rehousing or of reconditioning under the Act. The Minister may, for five years, make a grant towards the expenses of a central housing association. Housing authorities can also transfer to permanent housing management commissions the management, control, and maintenance of working-class houses erected under any of the Housing Acts or under this Bill. The hope is thereby to remove the management of housing estates from the field of local politics, and to encourage professional management.

Medical News

The annual dinner of the Hunterian Society, to commemorate the 207th anniversary of the birth of John Hunter, will be held at the May Fair Hotel, Berkeley Square, W., on Thursday, February 14th, at 7.30 p.m.

Professor D. Fraser Harris will give a lantern lecture on "The Influence of Italy on England" at the Princess Elizabeth of York Hospital for Children, Shadwell, E., on Thursday, January 31st, at 8.45 p.m. Visitors will be welcome.

Dr. R. H. Ing will deliver a course of six public lectures on "The Chemical Structure of Drugs in Relation to their Physiological Action" at University College, Gower Street, W.C., on Mondays at 5 p.m. from February 11th to March 18th. Admission free, without ticket.

A course of four lectures on "Some Present-day Methods of Treatment" will be given at the Liverpool Psychiatric Clinic, 56, Bedford Street North, Liverpool, on Thursdays at 5 p.m. from February 7th to 28th. The fee for the course is 10s. (single lectures, 3s. 6d.), and written application for tickets should be addressed to the lecture secretary at the clinic.

A course of lectures and demonstrations on venereal diseases commenced at the Salford Municipal Clinic, 155, Regent Road, Salford, on January 8th, and will be continued on Mondays and Thursdays at 3.30 p.m. until April 1st inclusive.

A lecture on the theory and practice of contraception will be given to medical students and practitioners by Dr. Gladys Cox on February 8th, at 6 p.m., at the Walworth Women's Welfare Centre, 153A, East Street, S.E.17. Demonstrations will be given on February 15th and 22nd at 6 p.m. and 7 p.m. Those attending are asked to bring rubber gloves. To cover expenses of lecture and demonstration a fee of 5s. is charged. Tickets admitting to the lecture are to be applied for in advance.

The winter post-graduate session at the Hampstead General and North-West London Hospital recommenced on January 23rd and will be continued on Wednesdays until March 27th inclusive. All lectures begin at 4 p.m., with the exception of the one on March 13th, which is at 4.30 p.m.

A special course of post-graduate instruction in neurology, arranged by the University of Durham College of Medicine, opened at the Royal Victoria Infirmary, Newcastle-upon-Tyne, on January 17th, and will be continued on Thursdays at 3 p.m. to March 21st inclusive. Classes for clinical instruction in medicine and surgery, or lecture demonstrations, opened on January 20th, and will be held every Sunday at 10.30 a.m. to March 24th inclusive. All medical practitioners are invited to attend these classes, for which there is no fee, and particulars will be given week by week in the diary column of our *Supplement*.

At a meeting of the Section of Laryngology of the Royal Society of Medicine on Friday, February 1st, at 5 p.m., Dr. Ferris Smith of Grand Rapids, U.S.A., will open a discussion on "Treatment of Chronic Infection of the Nasal Accessory Sinuses." Other speakers will include Mr. T. B. Layton, Mr. H. G. Bedford Russell, Mr. C. Gill-Carey, Mr. G. H. Howells, Mr. Walter Howarth, and Mr. P. Watson-Williams. Cases will be shown.

A meeting of the Food Group of the Society of Chemical Industry will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Wednesday, February 13th, at 8 p.m., when Dr. H. B. Cronshaw will open a discussion on "Training of the Food Technologist."

The Fellowship of Medicine announces that a lecture on constipation will be given at 11, Chandos Street, W., on February 1st, at 4.15 p.m.; the lecture on February 8th will be on diarrhoea. At the Wellcome Museum of Medical Science on January 31st, at 3 p.m., a demonstration will be given of examples of Bright's disease; and on February 7th on syphilis. On January 31st, at 8.30 p.m., sound-films on rehabilitation methods of treatment and training of the physically handicapped will be shown by Dr. H. H. Kessler of Newark, New Jersey, at the Western Electric Company's Theatre, Bush House, Aldwych, W.C. Admission to these films by ticket only. Special courses include: medicine and surgery, at the Southend General Hospital, on February 2nd and 3rd; physiotherapy, at the St. John Clinic and Institute of Physical Medicine, on February 9th and 10th; chest diseases, at the Brompton Hospital, February 11th to 16th; gynaecology, at the Chelsea Hospital for Women, February 11th to 23rd; and an M.R.C.P. evening course, at the National Temperance Hospital, Tuesday and Thursday evenings at 8 p.m. Details can be obtained from the Fellowship, 1, Wimpole Street, W.1.

The following international post-graduate courses have been arranged for 1935 by the Berlin Academy for Medical Post-Graduate Training: internal medicine, with special regard to gastro-intestinal ailments, March 4th to 9th—fee, RM. 40; disturbances of metabolism and of the glands of internal secretion, March 11th to 16th—fee, RM. 40, or, if taken with the earlier course, RM. 60; practical progress of *x*-ray diagnosis and therapy, particularly for internal ailments, March 18th to 24th—fee, RM. 70; special course in urology, March 25th to 30th—fee, RM. 70; occupation and sickness, with special consideration of expert opinion, April 1st to 8th—fee, RM. 40; special course for surgeons, April 29th to May 4th—fee, RM. 70; special courses in all branches of medicine, with bedside and laboratory practice, are held every month—fee, RM. 50 to 80 for eight lessons of two hours each. Programmes and further particulars are obtainable from the Academy, Berlin, N.W.7, Robert-Koch-Platz 7 (Kaiserin Friedrich-Haus). Foreign doctors receive a 25 per cent. reduction of fare on the German railways (Reichsbahn). By using "registered marks" they can reduce the cost of sojourn, but for this purpose their home bank should be consulted before departing for the trip.

The council of the Medical Society for the Study of Venereal Diseases offers an honorarium of £25 for the best critical review dealing with any of the venereal diseases considered from any angle. The selected review becomes the property of the council, which will be at liberty to publish in the *British Journal of Venereal Diseases* any paper other than the one for which the prize is awarded. Contributions of about 6,000 words should be typewritten on one side of the paper only, with a quarter of a page as a margin, and sent to the honorary secretary, "M.S.S.V.D.," 43, Queen Anne Street, London, W.1, before July 31st, 1935.

On January 15th the authorities of the Barnsley Isolation Hospital inspected the Medical Centre at British Industries House in London, and selected the complete equipment of a new eight-bed ward and operating theatre for the new block of their hospital. Before the visit a list of the 850 requirements of the hospital was prepared in order that those responsible for the Medical Centre could assemble a selection.

Dr. W. H. Woods of Mount Brydges, Ontario, has forwarded a copy of an article by him, which appeared in the *Canadian Journal of Medicine and Surgery* for November, 1934; it describes some human bones, and in particular a skull, which were found twenty years ago in a gravel pit at Delaware. The skull is that of an Indian male, and the claim is made that this is the first skull of great antiquity ever found in Canada. It has been presented to the University of Western Ontario, London, Canada, together with the correspondence with experts concerning it.

The following medical men were elected to the council of the Royal Microscopical Society at the annual meeting on January 16th. As vice-president, Professor D. M. Blair; as an honorary secretary, Dr. R. T. Hewlett; as members of the council, Dr. A. S. Burgess and Dr. G. M. Findlay; as honorary editor, Dr. Findlay. Professor Frank Balfour Browne was re-elected president.

Dr. Eleanor Soltau has been appointed a justice of the peace for the county of Suffolk.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediseva Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Colotomy Belt

"M." would be grateful for any help he may receive for a patient who is greatly troubled following an operation for colotomy owing to the pressure of the rubber ring of the cup causing an excessive prolapse of the bowel with subsequent irritation. Because of this effect the patient has been meantime forced to resort to the constant use of soft bandages and wool. Is there any alternative fitting known for such a case?

Wine for Prostatic Case

Dr. G. M. WILCOCKSON (Guildford), replying to the inquiry by "Medico" (January 12th, p. 91), suggests that white "Valdepeñas," a light, dry Spanish wine at 2s. 6d. a bottle, would answer the purpose. The importers are A. Sordo Lopez and Son, 15, George Street, Manchester Square, W.1.

Painful Insulin Injections

"R. J. C." asks for suggestions for mitigating the pain of daily insulin injections given to a girl of 11 years by her mother.

Treatment of Scarlatinal Nephritis

Dr. A. V. LÈCHE (Fever Hospital, Axbridge, Somerset) writes: During the past month I have had two grave cases of scarlet fever in boys of 8 and 12. They had nephritis, with blood and albumin in the urine. Both developed severe convulsions and coma, with incontinence of urine and faeces, with rapid pulse and respirations, and with rise of temperature. Death in each case seemed inevitable. I ordered rectal injections of warm normal saline solution every four hours. The result in each case was extraordinary. In thirty hours both patients were talking clearly and taking nourishment, and both continue to improve, with less albuminuria. One is sitting up in the ward for short periods, and the other, a very delicate lad, is gaining daily. After the third day the injections were given every six hours for two days, then every eight hours for two days, and finally twice daily for another three. The treatment is so simple and the results so dramatic that I am curious to know if it is a usual treatment in these cases.

Open Suprapubic Wound

Mr. B. G. S. BELAS (Middlesbrough) writes in reply to the question by "Inquirer" (January 19th, p. 137) about open suprapubic wound following prostatectomy in a patient who also had a large diverticulum: I fear that unless this latter condition has also been successfully dealt with then the urine will remain grossly infected and the wound will fail to close. Assuming, however, that the diverticulum has been excised and that the bladder is clean, then the cause will probably be some slight obstruction between the verumontanum and the re-formed bladder neck, which can be verified by urethroscopy and dealt with by diathermy used in conjunction with either the McCarthy or the Canny Ryall resectoscope.

White and Brown Sugar

Mr. H. C. S. DE WHALLEY, F.I.C. (chief chemist, Tate and Lyle, Ltd., London, E.), writes: In your issue of November 17th, 1934, "A. F. S." (Co. Mayo) makes some remarks on white and brown sugar, and asks what is the difference between them. In the following week's issue there is a reply from a correspondent (London, S.W.) which is incorrect. The composition of raw brown sugar is not as Nature made it. It does not contain vitamins, fats, or other carbohydrates, excepting cellulose in the form of cane fibres. Nature is not to be blamed for the content of sand, clay, and dirt that is generally present in raw brown sugars that have not been specially prepared for direct consumption and are yet exposed for sale. Insects, bacteria, and sugar lice are often to be found in these sugars. The salts which are present are not of the composition found in the cane, but may vary considerably. Lime used in defecation remains combined with any organic acidity, either original or produced by bacterial activity in the juice during manufacture. Sulphur dioxide combined as sulphites is often present as a remnant of purification operations in the factory. Of the total salts contained, 50 per cent. are sometimes insoluble in water, and of composition showing them to be valueless to the digestive system. Refined white sugar contains 99.95 per cent. sucrose, brown sugar 95 to 97 per cent. Refined white sugar is pure sucrose, whether derived from sugar cane or sugar beet, and its origin cannot be determined by any difference in composition or properties. Sucrose does not contain mineral salts, but, if taken as a part of a mixed diet, there should be no deficiency in minerals. As regards irritant effects of sucrose on skin, etc., it is stated in many reliable textbooks that in olden days, when grocers handled the raw brown sugar, which contained sugar acari or lice, these burrowed their way into the skin, caused irritation, and scratching followed, which led to skin troubles. Refined white sugar, being entirely free from these acari, cannot have the same effect. In British refineries the refined sugar is untouched by hand, and packed mainly in hygienic cartons, rendering handling unnecessary by the grocer, so that the sugar cannot be contaminated by dirt or dust. Sucrose is hydrolysed quickly to glucose (dextrose, not starch glucose) and fructose as the first part of digestion, and the presence of about 1½ per cent. of these already converted sugars in raw brown sugar, together with a little—very little—of the original salts present in the sugar cane, does not have any noticeable effect on digestion, so that sucrose is digested as quickly as brown sugar.

Income Tax

Expenses in Starting a Practice

"G. G." contemplates taking a small panel practice or just putting up his plate in his village. What expenses or allowances can he claim?

⁂ It should be remembered that the costs of starting or taking over a practice are not allowable—they represent capital outlay—and this would include the initial purchase of equipment. Where a part of the house is definitely set aside for professional use a reasonable proportion of the general expenses can be deducted from the gross earnings. The mere putting up of a plate would not necessarily give rise to such a claim, but where a part of the house is so set aside the claim would be valid, however small the receipts. If "G. G." has any particular expenses or allowances in mind perhaps he will communicate with us again.

Part of Residence Used Professionally

"A. A." claims one-half of the general expenses as applicable to professional use; the inspector of taxes considers one-third sufficient, and refuses to allow any proportion of the expenses of repair and decoration. Is £10 an excessive amount to disallow for private use of car when petrol used on holidays is paid for privately?

⁂ Admittedly "A. A." will have a larger house than he would if it were not used professionally, but the real test is what is a reasonable proportion as between the two kinds of use to which it is put, and not what "A. A." might pay if the facts were other than they are. It is difficult to offer advice where the facts can vary between such wide limits, but a point sometimes overlooked is that the garage is "professional" and some of the same element enters into the accommodation for the domestic staff when a maid is wholly or partly employed about the waiting room and surgery. So far as repairs, etc., are concerned it is usually possible to allocate to professional expenses the amounts actually spent on the professional part of the premises. £10 does not seem an excessive amount to allot to professional use of a car, unless the circumstances are unusual.

M.O.H.—Car Expenses

"X. Y. Z." is "a medical officer to a mental hospital, and obliged to conduct a nerve clinic fifty miles away." Can he deduct car expenses (depreciation and running costs) so far as they refer to the expense of travelling to and from the clinic?

⁂ If the attendance at the clinic is an obligation of his appointment as medical officer to the hospital he is entitled to deduct the necessary expense of travelling between the hospital and the clinic from the emoluments of his appointment. If the use of a car is necessary for the proper performance of his duties, economy of time, and so on, the appropriate car expense is chargeable; otherwise perhaps train fares and incidentals would be the proper basis. If, however, attendance at the clinic arises out of a different appointment the expense is not legally due.

LETTERS, NOTES, ETC.

Aetiology of Influenza

Dr. ROSEMARY PRITCHARD (London, W.1) writes: The annotation on influenza in your issue of December 29th, 1934 (p. 1205), is a challenge to all workers on the subject. I and my predecessors have only been engaged in our investigations for the past eight years, and it is therefore early days to say that the conclusions we have reached are justified; nevertheless, I heartily agree with the statement that no solution is likely to be found while isolated workers are searching for a specific micro-organism or virus. A survey of recent influenza epidemics will emphasize the fact that symptoms vary so much from one season to another, being sometimes pulmonary, sometimes gastric, and sometimes even cerebral, that we may well wonder whether our forebears, who named it "the influence," had not perhaps better vision than we who call it "influenza" and look for a specific micro-organism or virus as cause. Eight years' work in our laboratory points to the conclusion that the true offenders are the abnormal micro-organisms of the intestinal tract. The type of symptoms prevailing in any epidemic seems to be directly related to the group of micro-organisms that is most to the fore in the routine examinations of faeces made at the time in question. Thus, if Salmonella and Morgan types are frequently met with the prevailing type of influenza proves to be gastric; when Friedländer's bacillus and its near relations are prominent the prevailing type of influenzal symptoms are pulmonary, and so forth. Support for this view of influenza is to be had from the very successful results of treatment based on it. We have been treating influenza with a polyvalent intestinal vaccine, of which the method of preparation has been evolved over several years of experiment; it can be injected, or it can be "potentized" and given by the mouth. A discussion of how an epidemic is precipitated and how "infection" passes from one individual to another is outside the scope of this note, but the whole subject is fully treated in the *Nature of Disease Journal*, vols. i, ii, and iii (published by Messrs. Heinemann).

Niemeyer's Pill

Dr. ARCHIBALD FAIRLIE (Blyth, Northumberland) writes: The *Pharmacy, Materia Medica, and Therapeutics* of the late Sir William Whitla of Belfast was a popular guide among medical students of a former generation. Quoting from his work: "Baly's and Guy's pill, which usually is made to contain 1 grain each of powdered digitalis, squill, and blue pill, is a favourite diuretic in cardiac dropsy. Niemeyer's pill, much used in phthisis, contains 1/2 grain digitalis, 1 grain quinine, and 1/4 grain opium; and Heim's pill is the same, with the addition of 1/4 grain ipecac. and the omission of quinine." In the *British Pharmaceutical Codex*, 1923 and 1934, pil. digitalis co. has as synonyms "pilulae digitalis cum scilla; Guy's pills; Niemeyer's pills." A few years ago I had correspondence with Sir William Whitla and his successor in the chair of materia medica and therapeutics at Queen's University, Belfast, on the subject, and they assured me that the authority for Professor Whitla's formula for "Niemeyer's pill" was Niemeyer's own works. I believe this opinion was forwarded to the secretary of the Codex Committee at the time. It would be interesting to have authoritative opinions on the above contradictory formulae.

Castor Oil Vapour as a Purgative

Mr. W. C. SLATER (The British Fumigants Company Ltd., London, E.C.3) writes: I was much interested to read of Dr. Graham Macphee's observation on the laxative effect of the vapour of castor oil when breathed. I can confirm Dr. Macphee's observation. In the course of our manufactures we frequently saponify castor oil in hundredweight batches, the operation lasting ten to fifteen minutes. During the latter half of this time steam is given off fairly copiously, and this, when breathed only once or twice, will produce a laxative effect; it has been noted on each occasion that this operation has been performed for several years. I have often wished for sufficient spare time in which to examine this matter a little more closely, as obviously the laxative effect is being produced in my case by a constituent of castor oil which is volatile in steam, and which, when breathed into the lungs, produces a laxative effect in a very short space of time. It is legitimate to doubt whether the main constituent of castor oil, triglyceryl ricinoleate, is responsible for this effect. In the first place, it is not volatile in steam, and in the second place I am unaware of its being absorbed in the lungs. Perhaps some of your readers may be able to throw light on this matter, as it seems as though we have here an extremely potent purgative which can be administered by inhalation. I shall be glad to co-operate with anyone who is interested in this matter.

Addendum

Mr. WENTWORTH TAYLOR (Birmingham) writes: In the summary of my paper on post-partum haemorrhage, which appeared in the *Journal* of January 12th, I made a reference to Dr. Gibbon FitzGibbon in the paragraph which deals with the place of atony of the uterus. This reference was omitted in the published report; it applies to page 392 of *Practical Midwifery*, by Gibbon FitzGibbon.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 32.